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TEST-28

TEST BOOKLET

Test Booklet Series

C

GENERAL STUDIES (P) 2022 – Test – 3497

Time Allowed: Two Hours **Maximum Marks: 200**

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES **NOT** HAVE ANY UNPRINTED OR TURN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.

2. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C** OR **D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET.

3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **Do NOT** write anything else on the Test Booklet.

4. This Test Booklet contains **100** items (Questions). Each item is printed in **English & Hindi.** Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response with you consider the best. In any case, choose **ONLY ONE** response for each item.

5. You have to mark all your responses ONLY on the separate Answer Sheet provided. See direction in the answers sheet.

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6. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of **correct responses** marked by you in the answer sheet. For **every incorrect** response **1/3rd of the allotted marks** will be deducted.

7. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per instruction sent to you with your Admission Certificate.

8. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.

9. Sheet for rough work are appended in the Test Booklet at the end.

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1. Consider the following statements with regards to the Zero Tillage:

1. Seeds are sown through drillers without prior land preparation.
2. Seeds sown under this method do not encounter the crust in the soil.
3. It helps in reduction of green house gas effect.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

2. Recently, the world's first large-scale plant to suck carbon dioxide out of the air and turn it into rock has started. It is called Orca and is located in

(a) Iceland
(b) Canada
(c) Mexico
(d) Japan

3. In the context of environment, the term 'Triple Planetary Crisis' sometimes seen in news refers to which one of the following?

(a) Biodiversity loss, social disintegration and economical loss due to pollution
(b) Crisis of Climate change, nature and pollution
(c) Population growth, biodiversity loss, water pollution
(d) Climate change, land degradation and damage caused by persistent organic pollutants

4. Consider the following statements with reference to the atmospheric new particle formation (NPF):

1. It is the growth of the aerosol nuclear cluster to a larger size.
2. It occurs everywhere in the terrestrial troposphere.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

5. Consider the following events from the life of Raja Rammohan Roy:

1. He published *Sambad Kaumudi*.
2. He wrote his famous book in Persian *'Gift to Monotheists'*
3. He founded Atmiya Sabha in Calcutta.

Which of the following is the correct chronological sequence of the above events?

(a) 2-1-3
(b) 3-2-1
(c) 2-3-1
(d) 1-3-2

6. This National Park was established in the year 1936 as Hailey National Park and is India's oldest National Park. It was the place where Project Tiger was first launched in 1973. The park encompasses the Patli Dun valley formed by the Ramganga river. Which of the following National Park has been described in the passage given above?

(a) Gangotri National Park
(b) Jim Corbett National Park
(c) Dachigam National Park
(d) Dudhwa National Park

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7. In the context of wildlife, consider the following statements:

1. Territory is the wider geographical area in comparison to the home range.
2. A territory of an animal can be marked out using movements, sound, or smell.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

8. With reference to High court judges, consider the following statements:

1. The Constitution has specified strength of a high court.
2. Judicial review is available in case of transfer of a high court judge.
3. The retired permanent judges of a high court are not prohibited from pleading or acting in any court or before any authority in India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) 2 and 3
(d) 1 and 3 only

9. In the context of modern Indian history, the famous Chirala-Perala agitation of 1919 in the Guntur district was a

(a) tribal movement
(b) temple entry movement
(c) no-tax campaign
(d) movement to ban child marriages

10. The word 'Issi Saaneq' is recently seen in the news is a fossil of which of the following species?

(a) Flightless bird
(b) Cheetah
(c) Insectivorous plant
(d) Two legged dinosaurs

11. Consider the following statements with respect to Harappan inscriptions:

1. The unique feature of Harappan inscriptions was that they were written only from right to left.
2. The inscriptions found on seals have human, animal, and plant motifs.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

12. Consider the following statements regarding Cabinet Secretariat:

1. It functions directly under the Prime Minister.
2. The Office of Principal Scientific Adviser (PSA) has been placed administratively under it.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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13. The Global Survey on Digital and Sustainable Trade Facilitation is conducted every two years by

(a) World Trade Organization
(b) World Bank
(c) United Nations Conference on Trade and Development (UNCTAD)
(d) United Nations Economic and Social Commission for Asia Pacific's (UNESCAP)

14. Which of the following refers to the termination of a session of a House of Parliament?

(a) Adjournment
(b) Adjournment *sine die*
(c) Prorogation
(d) Dissolution

15. With reference to the human body, consider the following statements regarding eyes:

1. Iris controls the amount of light that enters the eye.
2. Rods in the eyes are sensitive to dim light.
3. Cones in the eyes are used to see colour.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

16. Recently seen in the news "Water Innovation Challenges" is a collaboration between India and

(a) Sweden
(b) The United Kingdom
(c) Australia
(d) Denmark

17. Recently launched by SpaceX's Dragon spacecraft, the mission is the first all civilian, non government space expedition. It orbited around the Earth higher than the Hubble Telescope for 3 days. The mission is a part of an effort to raise funds for pediatric treatment and research facility that focuses on children's catastrophic diseases, particularly leukemia and other cancers.

Identify the space mission from the passage given above.

(a) Artemis
(b) Unity 22
(c) Inspiration4
(d) Gemini-Titan 12

18. Consider following statements regarding Attorney General of India:

1. He must have the same qualification as are required to be a Judge of Supreme Court.
2. He receives such remuneration as the President may determine.
3. He is a whole-time counsel for the Government.

Which of the statements given above is/are correct?

(a) 1, 2 and 3
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1 and 2 only

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19. With reference to the borrowed features of the Constitution, consider the following pairs:

Feature		***Source***
1. Suspension of fundamental rights during an emergency	:	Government of India Act of 1935
2. Advisory jurisdiction of the Supreme Court	:	Australian Constitution
3. Freedom of trade, commerce, and intercourse	:	Canadian Constitution

Which of the pairs given above is/are correctly matched?

(a) 3 only
(b) 2 only
(c) 1 and 3 only
(d) None

20. With reference to the recent reforms in the Telecom sector in India, consider the following statements:

1. As part of statutory levies to the government, the telecom operators are required to pay license fees and spectrum charges.
2. The government allows a 100% FDI through automatic route in the Telecom Sector.
3. The spectrum auctions shall be done for a period of 30 years.

Which of the statements given above is/are correct?

(a) 2 and 3 only
(b) 2 only
(c) 1, 2 and 3
(d) 1 only

21. The initiative 'RUDRA', developed by the Centre for Development of Advanced Computing (C-DAC) recently is a

(a) Computer Server
(b) Supercomputer
(c) Autonomous robot
(d) Unmanned drone

22. With reference to the process of soil formation, consider the following statements:

1. The conversion of nutrients in organic matter into the mineral inorganic form is termed mineralization.
2. The development of humus from dead organic material by the action of saprotrophic organisms is termed humification.

Which of the statements given above is/are ***not*** correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

23. Which of the following provisions were originally ***not*** part of Directive Principles provided under part IV of the Indian Constitution?

1. To minimise inequalities in income, status, facilities and opportunities.
2. To secure opportunities for healthy development of children.
3. to provide early childhood care and education for all children until they complete the age of six years.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 1, 2 and 3
(c) 2 and 3 only
(d) 3 only

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24. Arrange the given colonial cities in chronological order in which they were occupied or colonized by the British or the company:

1. Bombay
2. Madras
3. Calcutta

Select the correct answer using the code given below.

(a) 3-2-1
(b) 1-2-3
(c) 2-1-3
(d) 3-1-2

25. Consider the following statements regarding the Dye-sensitized solar cell (DSSC):

1. It is a low-cost solar cell belonging to the group of thin-film solar cells.
2. The efficiency of the existing DSSC is more than seventy per cent.
3. Natural extracts from beetroot, hibiscus, green algae and black carrot have been utilised as solar cell dye.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

26. With reference to the Academic Bank of Credit (ABC) Platform, consider the following statements:

1. Any University or College irrespective of the rankings can be a part of the ABC framework.
2. The validity of academic credit for courses under the framework is a lifetime.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

27. Consider the following pairs:

Biofertilizers		***Crops suited***
1. Azospirillum	:	Sugarcane
2. Blue-green algae	:	Rice
3. Rhizobium	:	Leguminous crops

Which of the pairs given above is/are correctly matched?

(a) 1, 2 and 3
(b) 1 and 3 only
(c) 1 only
(d) 2 and 3 only

28. Which of the following statements regarding Gravitational Force (between two bodies) is ***not*** correct?

(a) It is always attractive in nature.
(b) It is dependent on the presence or absence of other objects in the neighborhood.
(c) It is independent of the nature of the medium between the two objects.
(d) It acts along the line joining the centers of the two objects.

29. With reference to the world's carbon budget between 1870 to 2019, consider the following statements:

1. India has contributed to twenty percent of the total emissions during this period.
2. The United States of America has the highest percentage of contribution of emissions.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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30. Which of the following best describes Pigovian Tax?

(a) It is a tax to discourage negative production externalities.
(b) It is a temporary tax on tax to fulfil a social cause.
(c) Tax levied on imported goods which distort the domestic market.
(d) It is a tax levied upon digital assets legally recognised in India.

31. Consider the following statements regarding Minority Educational Institutions under Article 30 of the Constitution:

1. A Minority institution has a right to admit the eligible students of their choice.
2. State government cannot impose regulations on these institutions in the appointment of teachers.
3. They are outside the purview of the Right to Education (RTE) Act under Article 21A.

Which of the statements given above is/are correct?

(a) 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

32. Consider the following statements with respect to External Debt of India:

1. Total external debt to GDP ratio has constantly increased in the last 5 years.
2. The quantum of short term debt is much higher compared to long term debt.
3. As per the recent RBI estimates, the total foreign exchange reserves are higher than the external debt of India.

Which of the statements given above is/are correct?

(a) 2 only
(b) 3 only
(c) 1 and 2 only
(d) 1 and 3 only

33. Consider the following statements with respect to ratios used to measure the financial health of a company/bank:

1. The higher the Current Ratio, the better the company's liquidity position.
2. Provisioning Coverage Ratio (PCR) is the ratio of a bank's capital in relation to its risk-weighted assets and current liabilities.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

34. With reference to Thunderstorms, consider the following statements:

1. They are caused by the horizontal movement of moist air between pressure belts.
2. They are always characterised by cumulonimbus cloud and hailstorm.
3. They are essential for development of a tornado.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 and 3 only
(c) 3 only
(d) 1 and 2 only

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35. Consider the following statements with respect to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS):

1. TRIPS agreement allows government use of a patent without the authorisation of its owner.
2. TRIPS agreement mandates all the WTO members to include all the plant and animal inventions in the patenting regime in their respective countries.
3. TRIPS council which is responsible for monitoring the operation of TRIPS agreement comprises of top 20 trading nations.

Which of the statements given above is/are ***not*** correct?

(a) 2 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1 and 3 only

36. With reference to Western Disturbances, consider the following statements:

1. More than seventy-five percent of annual precipitation over the North-West Indian region is associated with Western Disturbances.
2. It may lead to dense or very dense fog events.
3. Precipitation from the western disturbances is very vital for the Rabi Crop over northwest India.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

37. Consider the following statements with respect to financial markets:

1. 'Rights Issue' is a privilege given to Qualified Institutional Buyers to subscribe to the a new issue of shares.
2. National Securities Depositories Limited (NSDL) is promoted by Bombay Stock Exchange and the Bank of India.
3. Over The Counter Exchange of India (OTCEI) was established to provide small and medium companies an access to the capital market.

Which of the statements given above is/are ***not*** correct?

(a) 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 1, 2 and 3

38. Consider the following statements about the Gaganyaan Mission of Indian Space Research Organisation :

1. The mission envisages a demonstration of human spaceflight to Low Earth Orbit (LEO).
2. With the launch of this mission, India will become the fourth nation in the world to launch a Human Spaceflight Mission.
3. The proposed VIKAS engine to be used for this mission is a cryogenic engine.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

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39. Arrange the following Islands of Indian Ocean from North to South.

1. Seychelles
2. Reunion Island
3. Mauritius

Select the correct answer using the code given below.

(a) 2-1-3
(b) 3-1-2
(c) 1-2-3
(d) 1-3-2

40. Consider the following statements related to SAMBHAV:

1. It is a program to teach profitable crafts and vocations to the rural elderly suitable for their age.
2. It has been launched by the Ministry of Micro, Small & Medium Enterprises (MSME).

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

41. The Gaya Session of the Indian National Congress (1922) is very important in history, because

1. the Congress passed a resolution defeating swarajists" proposal for council entry.
2. rift between the pro-changers and no-changers was resolved in this Session.
3. Gandhiji threatened to launch Civil Disobedience Movement from Bardoli..

Select the correct answer using the code given below.

(a) 1 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) None

42. Consider the following statements regarding Hindustan Republican Association:

1. It was formed by Ramprasad Bismil and Sachin Sanyal.
2. Its objective is to setup a Federal republic of United States of India with adult franchise.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

43. 'Uronema africanum Borge' recently seen in the news is a/an

(a) algae that can digest plastic
(b) plant that can absorb CO2 at twice the rate of normal plants
(c) invasive species affecting agricultural crops
(d) newly rediscovered carnivore thought to be extinct

44. Consider the following statements:

1. Like the ulemas, Sufis were mystics.
2. Sufis were against formal worship, rigidity and fanaticism in religion.
3. Sufism marked its advent into India during the Mughal Rule.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 2 and 3 only
(d) None

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45. Recently seen in the news, I-LAB is a/an:

(a) Mobile lab for robust testing of building materials under National Infrastructure Pipeline.

(b) Initiative under the Atal Innovation Mission to promote scientific temperament in North Eastern states.

(c) Mobile testing laboratory to perform RT-PCR and ELISA tests.

(d) Project of the ISRO to find best possible window for the launch of Gaganyan.

46. Consider following statements regarding Jainism:

1. Jains believe in the existence of twenty four *tirthankaras* before Mahavira.
2. Rishabhdev is considered to be the first *tirthankara*.
3. Parshvanath was the twenty third *tirthankara.*

Which of the statements given above is/are correct?

(a) 2 and 3 only

(b) 1 and 3 only

(c) 2 only

(d) 1, 2 and 3

47. With reference to Good Governance Index, consider the following statements:

1. It is prepared by the Department of Administrative Reforms and Public Grievances (DARPG), Ministry of Personnel, Public Grievances and Pensions.
2. It is envisaged as an annual exercise based on ten sectors to arrive at a composite ranking.
3. More than half of the states have improved their composite Good Governance Index score compared to the last released Index.

Which of the statements given above is/are correct?

(a) 1 only

(b) 1 and 3 only

(c) 2 only

(d) 1, 2 and 3

48. Arrange the following Sun temples in India from north to south.

1. Martand Sun temple
2. Konark Sun temple
3. Suryanarayana Swamy temple

Select the correct answer using the code given below.

(a) 3-2-1

(b) 1-2-3

(c) 2-1-3

(d) 3-1-2

49. Which of the following ecological functions are performed by freshwater turtles?

1. They keep rivers, ponds, and freshwater sources clean by eating algal blooms and scavenging on dead matter.
2. They help in the dispersal of seeds of plant species.
3. They control invasive fishes by eating them.

Select the correct answer using the code given below.

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

50. In the context of parliamentary evolution in India, which of the following is the oldest committee?

(a) Estimates Committee

(b) Public Accounts Committee

(c) Committee on Public Undertakings

(d) Ethics Committee

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51. With reference to the types of grants made by the Parliament, consider the following statements:

1. Exceptional Grant is made for meeting an unexpected demand which forms part of the current service of any financial year.
2. Token Grant is granted when funds to meet the proposed expenditure on a new service can be made available by reappropriation.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

52. Which of the following could be the potential reasons to buy Negative Yielding Bonds?

1. Safe Haven investments in times of Economic Uncertainty
2. Manipulations around increased currency exchange rate.
3. Asset allocation to hedge the risk of loss from investments such as equities.

Select the correct answer using the code given below.

(a) 2 and 3 only
(b) 1, 2 and 3
(c) 1 and 3 only
(d) 2 only

53. As part of the Indian Railways modernization, the government has recently proposed Kavach technology for Railways. In this context, consider the following statements regarding Kavach technology:

1. It is developed in collaboration with Japan.
2. Its objective is to prevent collisions of trains.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

54. The facilities like 'Poverty Reduction and Growth Facility', 'Catastrophe Containment and Relief Trust' are often mentioned in the news in the context of providing relief to low-income countries to tackle the economic impact during the pandemic. They are promoted by which of the following?

(a) G20
(b) World Bank
(c) European Central Bank
(d) International Monetary Fund

55. In the context of ancient cities/ports, which of the following pairs is/are correctly matched?

Cities		***Famous for***
1. Korkai	:	Pearl
2. Puhar	:	Cotton cloth
3. Madurai	:	Ivory making

Select the correct answer using the code given below.

(a) 3 only
(b) 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

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56. Consider the following statements regarding the African Financial Alliance on Climate Change (AFAC):

1. It was launched at the 26th Conference of the Parties (CoP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow in 2021.
2. It will complement and leverage other global and regional climate change initiatives being launched by the Group of Twenty (G20) countries.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

57. These are nomadic tribe that migrated from Northern India and now mainly settled in Karnataka region. They are known as Bird Catchers. Today, they are mainly engaged in selling of herbal products like herbal oils.
Which one of the following tribes is described in the information given above?

(a) Van Gujjars
(b) Hakki Pikki
(c) Dard
(d) Maldhari tribe

58. Consider the following statements with regards to 'New India Literacy Programme':

1. The objective of the scheme is to solely target foundational literacy and numeracy.
2. The scheme will be implemented through volunteerism through online mode.
3. It aims to cover non-literates of the age of 14 years and below in all states/UTs in the country.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 3 only
(c) 2 only
(d) 1, 2 and 3

59. With reference to the reactivity of metals, which of the following is the most reactive element?

(a) Silver
(b) Aluminium
(c) Lead
(d) Copper

60. The term 'Trade Parity Price' is often seen in the news in the context of

(a) determining Minimum Support Price
(b) calculating oil prices
(c) fixing minimum wages
(d) determining whether a product is being dumped in the domestic economy

61. In the context of Space, consider the following statements regarding Blue Stragglers:

1. They are Comets with a Bluetail.
2. There are no Blue Stragglers in our solar system.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

62. With reference to Indian laws on Minor Minerals, consider the following statements:

1. Minor minerals are those with limited availability in India.
2. The central government has the power to notify minor minerals.
3. The power to frame policy and legislation relating to minor minerals is entirely delegated to the State Governments.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 3 only
(d) 1, 2 and 3

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63. The texts talks about creation and recreation of world, the genealogies of gods and rishis and accounts of royal dynasties. The concept of four ages or yugas – krita, treta, dvapara and kala is also mentioned. The texts mentioned here are:

(a) Aryankas
(b) Upanishads
(c) Puranas
(d) Brahamanas

64. Consider the following statements regarding the Deccan Riots during the British India period (1870s):

1. The riots were a result of the loss of cotton demand and subsequent misery of ryots (peasants) after the American Civil War.
2. It was supported by Poona Sarvajanik Sabha.
3. It was mainly directed against the moneylenders.

Which of the statements given above is/are correct?

(a) 2 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

65. With reference to the Consolidated Sinking Fund, Consider the following statements:

1. The Consolidated Sinking Fund aims at smooth repayment of public debt.
2. The fund can be financed through the Consolidated Fund of the State.
3. Consolidated Sinking Fund lowers the financing cost of a bond.

Which of the statements given above is/are correct?

(a) 3 only
(b) 1, 2 and 3
(c) 1 and 2 only
(d) 1 and 3 only

66. Which of the following best describe the relationship between Relative Humidity (R.H.) and dew point?

(a) R.H. will be minimum when the dew point and the ambient temperature are the same.
(b) R.H. will be 100% when the dew point and the ambient temperature are the same.
(c) R.H. and the dew point are the two concepts that are mutually exclusive and hence one does not affect the other.
(d) R.H. is cited as a more accurate way of measuring the humidity and comfort than dew point.

67. Which of the following is responsible for the bifurcation of the jet stream blowing around himalayas?

(a) Aravali range
(b) Tibetan highlands
(c) Shivaliks
(d) Nag tibba range

68. Consider the following statements with respect to Code on Wages, 2019:

1. Parliament is empowered to fix the National Floor Level Minimum Wage.
2. The code is applicable to both scheduled and non-scheduled employees.
3. Under the code, the payment for overtime working period must be at least twice the normal rate of wages.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

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69. The term aquamation, recently seen in the news, is related to:

(a) It is the branch of biology which studies the microscopic anatomy of aquatic animals.

(b) It is a kind of test that helps in diagnosing the death caused by drowning.

(c) It is a process in which the body of the deceased is immersed for a few hours in a mixture of water and a strong alkali in a pressurized metal cylinder.

(d) It is a kind of hydrolysis that breaks down proteins, lipids, oils, fats, and carbohydrates through the catalytic action of enzymes.

70. Which of the following is/are included under the ambit of the Reserve Bank of India - Integrated Ombudsman Scheme, 2021?

1. Non-Scheduled Primary Co-operative Banks with deposit size of ₹50 crores and above
2. Non-Banking Financial Companies
3. Regional Rural Banks

Select the correct answer from the code given below.

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

71. Supreme court invented the 'Doctrine of essentiality' as part of judicial innovation, it is related to which section of fundamental rights?

(a) Right to equality

(b) Right against exploitation

(c) Right to freedom of religion

(d) Right to constitutional remedies

72. With reference to Ramsar Sites in India, consider the following statements:

1. India has more than fifty sites designated as Wetlands of International Importance (Ramsar Sites).
2. India has the largest number of Ramsar sites in South Asia.
3. Kerala has the largest number of Ramsar sites in India.
4. Vembanad Kol Wetland is the largest Ramsar Site in India.

Which of the statements given above is/are correct?

(a) 1 and 3 only

(b) 2 only

(c) 4 only

(d) None

73. With reference to recently seen in news *"Bhu Parikshak"*, consider the following statements:

1. It is a portable device to detect sodium and nitrogen components of soil.
2. It has been developed by the Indian Council of Agriculture Research.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

74. In the context of cultural traditions of Indian philosophy, the main text of Purva Mimamsa was written by:

(a) Kapila

(b) Gautam Muni

(c) Patanjali

(d) Jaimini

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75. Consider the following statements regarding the Coral Reefs:

1. Coral reefs are a sensitive indicator system for coastal ocean health and climate change.
2. Coral reefs cover just under 1% of the ocean floor but support more than 25% of marine life.
3. Global Coral Reef Monitoring Network was established by the International Union for Conservation of Nature (IUCN) with the primary task of reporting on the condition of the world's coral reefs.

Which of the statements given above are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

76. Consider the following pairs regarding the committees of the Constituent Assembly and their chairman:

Committee		***Chairman***
1. States Committee	:	Vallabhai Patel
2. Steering Committee	:	Rajendra Prasad
3. Committee on the Functions of Constituent Assembly	:	Jawahar Lal Nehru

Which of the pairs given above is/are correctly matched?

(a) 1 and 3 only
(b) 2 only
(c) 1 and 2 only
(d) None

77. Consider the following statements:

1. If a Central bank decreases the reserve ratio, money multiplier in the economy also decreases.
2. If the GDP of an economy remains constant, increase in the money supply decreases the velocity of money.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

78. With reference to the ESG (Environment, Social and Governance) Funds, Consider the following statements:

1. ESG funds are kinds of mutual funds with socially responsible investing.
2. It is mandatory for top 1000 listed companies in India to prepare reports containing detailed ESG disclosures.
3. ESG Funds are regulated and managed by the Ministry of Finance.

Which of the statements given above is/are correct?

(a) 1, 2 and 3
(b) 1 and 2 only
(c) 3 only
(d) 1 only

79. Which of the following statements best describe a K-shaped economic recovery?

(a) Even, Uniform recovery across sectors, industries or groups of people.
(b) Economy passes through a recession into recovery and then immediately turns down into another recession.
(c) Situations where parameters fall quickly into a situation called Depression and fail to recover.
(d) Different parts of the economy recover at different rates, times, or magnitudes.

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80. Consider the following international events:

1. Russo-Japanese war
2. Defeat of Italian army by the Ethiopia (Abyssinia)
3. Opium wars

Which of the international events given above inspired the revolutionary nationalism in India?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

81. With reference to India, consider the following statements:

1. First Information Report (FIR) is defined under Code of Criminal Procedure (CrPC).
2. Under cognizable offence a police officer may make an arrest without a warrant.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

82. Consider the following statements with respect to Infrastructure Debt Fund (IDF):

1. They aim at investing in the debt securities of infrastructure companies.
2. A Company based Infrastructure Debt Fund is regulated by the Securities and Exchange Board of India (SEBI).
3. It can be established by both banks and Non-Banking Financial Companies (NBFCs).

Which of the statements given above is/are correct?

(a) 1, 2 and 3
(b) 3 only
(c) 1 and 2 only
(d) 1 and 3 only

83. Which of the following statements is/are correct about the reign of Firoz Tughlaq?

1. He established firm control over Bengal.
2. He disregarded the advice of the ulemas.
3. He abolished slavery.

Select the correct answer using the code given below.

(a) 3 only
(b) 1, 2 and 3
(c) 1 and 2 only
(d) None

84. Consider the following passage:

" It is a form of semi classical vocal music inspired by the folk songs of camel riders in the Punjab area. It is set in ragas generally used for the semi classical forms. It is characterized by jumpy and flashy tonal movements with rhythmic and rapid notes."

It is

(a) Kajri
(b) Laman
(c) Powada
(d) Tappa

85. The initiative "e-Sawari India E-Bus Coalition", recently seen in the news was launched by

(a) NITI Aayog
(b) Indian Renewable Energy Development Agency Limited
(c) UNESCO
(d) International Institute for Sustainable Development

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86. Consider the following statements:

1. Information and Broadcasting Ministry (I&B) has the powers to regulate content across the TV channels, newspapers and magazines, movies in theatres and the radio, barring the internet.
2. There are no specific laws on content allowed or prohibited in print and electronic media, radio, films or OTT platforms.
3. Sardar Vallabhbhai Patel was India's first Minister for Information and Broadcasting.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

87. Consider the following statements with regards to the Prime Minister's Council on Climate Change (PMCCC):

1. Its main objective is to coordinate work for India's commitments at COP 26 in Glasgow.
2. Its meeting is chaired by the Prime Minister after every two years.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

88. With reference to amendment to Official Languages Act,1963, the use of English in addition to Hindi is compulsory in which of the following cases?

1. Press communications issued by the Central government
2. Official papers laid before Parliament
3. Contracts and agreements executed, licenses, permits, notices, etc. issued by a corporation or a company owned by the Central government

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 only
(d) 1, 2 and 3

89. Being India's first privately developed cryogenic rocket engine. It is completely 3D printed. The engine developed by a Hyderabad-based start-up Skyroot Aerospace uses Liquid Natural gas (LNG) and Liquid Oxygen (LoX) as propellants.

Identify the system from the passage given above.

(a) Amogha-1
(b) Dhawan-1
(c) ABHYAS
(d) Prithvi

90. Recently seen in the news FASTER system is related to:

(a) ISRO's latest announcement to fast track delayed space missions due to the pandemic
(b) Supreme Court's initiative to prevent delays in release of prisoners after bail
(c) Initiative of the National Highways Authority of India to curb glitches around the FASTag machinery
(d) Newly installed Anti-Drone system in areas around India-Pak border

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91. With reference to the Biological Diversity Act, 2002, consider the following statements:

1. No person can apply for any Intellectual Property Right in or outside India for any invention based on any research on a biological resource obtained from India without obtaining the previous approval of the National Biodiversity Authority.
2. Vaids and Hakims, who have been practising indigenous medicine can obtain any biological resource for commercial utilisation only after giving prior intimation to the State Biodiversity Board.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

92. With reference to Bahamani kingdom, consider the following statements:

1. Bahamani kingdom was established by Alauddin Hassan, after the fall of the Vijayanagar empire in Deccan.
2. The administration in Bahamani empire was managed only by muslims officials.
3. The decline of the Bahmani empire is attributed to the repeated attacks by Mughals.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) None

93. With reference to the types of Sedimentary Rocks, consider the following pairs:

Type		***Example***
1. Mechanically Formed	:	Shale
2. Organically Formed	:	Limestone
3. Chemically Formed	:	Marble

Which of the pairs given above are correctly matched?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

94. In the context of B. R. Ambedkar, arrange the following events in chronological order :

1. Mahad Satyagraha
2. Establishment of Bahishkrit Hitakarini Sabha
3. Establishment of Newspaper Mooknayak

Select the correct answer using the code given below.

(a) 3-2-1
(b) 2-3-1
(c) 3-1-2
(d) 2-1-3

95. Consider following statements regarding Delimitation Commission:

1. It is appointed by the President of India on the advice of Election Commission of India.
2. The Secretary to the Election Commission shall be the ex officio Secretary of the Commission.
3. In India, Delimitation Commission is constituted after every ten years.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 only
(c) 1 and 3 only
(d) 1 and 2 only

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96. With reference to Digital Embossing Technology, consider the following statements:

1. It is a printing technology that does not use chemicals, solvents and also emits no pollutants.
2. It can be used to produce braille maps for the visually challenged.
3. It was introduced in India recently by the National Atlas & Thematic Mapping Organisation (NATMO) functioning as the Attached Office of the Department of Science & Technology.

Which of the statements given above is/are correct?

(a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

97. With reference to Ain-e-dahshala system of medieval India consider the following statements:

1. Rope was replaced by the bamboo sticks tied with iron girdles for the purpose of measurement.
2. Land Revenue was fixed based upon the land capability and cropping intensity of the region.
3. A 'Bigha', unit of land measurement was accepted under Aine-dahshala system.

Which of the statements given above is/are correct?

(a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

98. Indian Capitalists generally preferred constitutional forms of struggle as opposed to mass civil disobedience. This was due to which of the following reasons?

1. Prolonged mass civil disobedience could turn the movement revolutionary in a social sense.
2. Prolonged mass struggle prevented the continuing of day-to-day business.
3. Indian capitalists were heavily dependent on British capital for investments.

Select the correct answer using the code given below.

(a) 1 and 2 only
(b) 1 and 3 only
(c) 2 and 3 only
(d) 1, 2 and 3

99. Lending to which of the following activities are included under the Priority Sector Lending (PSL) norms?

1. Loans to agro processing units upto 100 crore rupees
2. All loans to units in the Khadi and Village Industries Sector
3. Overdraft facility availed by Jan Dhan Accounts
4. All bank loans to MSMEs

Select the correct answer using code given below.

(a) 1 and 3 only
(b) 2 and 4 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

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100. With reference to 'Postal ballot', consider the following statements:

1. Under the Representation of the people act, 1951, Parliament can allow certain category of voters to cast their vote through Postal ballot facility.
2. Journalists are allowed to cast their vote using Postal ballot facility.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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ANSWERS & EXPLANATIONS
GENERAL STUDIES (P) TEST – 3497 (2022)

Q 1.D

- Tillage is an agriculture land preparation through mechanical agitation which includes digging, stirring and overturning. Zero tillage is the process where the crop seed will be sown through drillers without prior land preparation and disturbing the soil where previous crop stubbles are present. It not only reduce the cost of cultivation it also reduces the soil erosion, crop duration and irrigation requirement and weed effect which is better than tillage. It is also called No Tillage or Nil Tillage.
- **Statement 1 is correct:** Zero tillage is the process where the crop seed will be sown through drillers without prior land preparation and disturbing the soil where previous crop stubbles are present. It helps in reduction in the cost of inputs for land preparation and therefore a saving of around 80%.
- **Statement 2 is correct:** As zero tillage involves sowing of seeds alongside markers the seeds sown in this fashion do not encounter the crust in the soil the way it happens in tilling method.
- **Statement 3 is correct:** It is environmentally safe as Greenhouse effect will get reduced due to carbon sequestration. It involves use of residual moisture that can be effectively utilized and number of irrigations can be reduced. Also dry matter and organic matter get added to the soil.

Q 2.A

- **Recently the world's largest plant designed to suck carbon dioxide out of the air and turn it into rock has started running in Iceland.**
- The plant, named Orca after the Icelandic word "orka" meaning "energy", consists of four units, each made up of two metal boxes that look like shipping containers.
- Constructed by Climeworks and Iceland's Carbfix, when operating at capacity the plant will draw 4,000 tonnes of carbon dioxide out of the air every year. According to the US Environmental Protection Agency, that equates to the emissions from about 870 cars.
- **To collect the carbon dioxide, the plant uses fans to draw air into a collector, which has a filter material inside. Once the filter material is filled with CO2, the collector is closed and the temperature is raised to release the CO2 from the material, after which the highly concentrated gas can be collected. Then, Carbfix's process mixes the CO2 with water and injects it at a depth of 1,000 metres into the nearby basalt rock where it is mineralized.**
- **Hence, option (a) is the correct answer.**

Q 3.B

- Recently, the first United Nations Environment Program synthesis report titled: **"Making Peace With Nature: A scientific blueprint to tackle the climate, biodiversity and pollution emergencies"** was released and is based on evidence from global environmental assessments.
- **The crisis of climate change, the crisis of nature and the crisis of pollution**, together constitute the 'Triple Planetary Crisis' of our times. **Hence option (b) is the correct answer.**
- The report lays out the gravity of these three environmental crises by drawing on global assessments, including those from the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES), as well as UNEP's Global Environment Outlook report, the UNEP International Resource Panel, and new findings on the emergence of zoonotic diseases such as COVID-19.
- The report shows how this trio of environmental emergencies interact and have common causes, and thus can only be effectively addressed together.
- Subsidies on fossil fuels, for instance, and prices that leave out environmental costs, are driving the wasteful production and consumption of energy and natural resources that are behind all three problems.

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Q 4.C

- **Aerosols**
  - Aerosols are defined as a combination of liquid or solid particles suspended in a gaseous or liquid environment.
  - In the atmosphere, these particles are mainly situated in the low layers of the atmosphere (< 1.5 km) since aerosol sources are located on the terrestrial surface.
  - However, certain aerosols can still be found in the stratosphere, especially volcanic aerosols ejected into the high altitude layers.
- **What is Aerosol Nucleation?**
  - The formation of **small molecular clusters of sub-3nm size** is technically called aerosol nucleation, and subsequent growth of these newly formed clusters to the large sizes is called atmospheric new particle formation (NPF). **Hence, statement 1 is correct.**
  - NPF occurs everywhere in the terrestrial troposphere, and therefore it is a large source of aerosol numbers to the atmosphere. **Hence, statement 2 is correct.**
  - Though extensively studied globally using field observations, laboratory experiments and modelling approaches, it is largely unexplored in India.
- **What has the new research found?**
  - The research showed that a pool of sub-3nm particles is often present in the atmosphere, but how fast these clusters grow depends on various factors.
  - The scientists observed that only half of these events showed newly formed molecular clusters growing past 10 nm size.
  - Thus particle size distributions display a conventional banana-shaped aerosol growth, which is indicative of regional NPF events.
- **Role of Sulphur**
  - The team found a **strong positive correlation between sub-3nm particle concentrations and sulphuric acid concentrations**, confirming the potential role of sulfuric acid in the formation of sub-3nm particles.
  - While NPF often starts with sulphuric acid in the atmosphere, sulphuric acid alone fails to explain observed particle formation and growth rates in the atmosphere.
  - Other vapours such as ammonia, amines and organics play a crucial role in the growth of newly formed particles.
  - This has critical importance as a major fraction of these newly formed particles can reach to sizes of cloud condensation nuclei where they have climatic

Q 5.C

- Rammohan Roy learnt Greek and Hebrew to study Bible. **He wrote his famous work in Persian, *Gift to Monotheists (Tuhfat-ul-Muwahhidin),* in 1809** forwarding arguments against beliefs in multiple gods.
- Rammohan Roy joined English East India Company in 1805 and continued to work there till 1814. **After his retirement, he settled in Calcutta and founded Atmiya Sabha in 1815 with few of his young followers.** From this time, he carried persistent struggle against social and religious evils in Hinduism.
- Rammohan Roy was the advocate of the modern education. In 1817, he helped a Dutch watchmaker David Hare and founded the Hindu College in Calcutta for the promotion of modern education.
- **Rammohun Roy published the Sambad Kaumudi from 1821 and the Hindu orthodoxy commissioned the Samachar Chandrika to oppose his opinions.**
- **So the correct chronological sequence is 2-3-1.**

Q 6.B

- **Jim Corbett National Park** is a national park in India located in the Nainital district of Uttarakhand state.
- **The first national park in India**, it was established in 1936 during the British Raj and named **Hailey National Park** after William Malcolm Hailey, a governor of the United Provinces in which it was then located.
- In 1956, nearly a decade after India's independence, it was renamed Corbett National Park after the hunter and naturalist Jim Corbett, who had played a leading role in its establishment and had died the year before.
- It is also being honored as the place where **Project Tiger was first launched in 1973.**
- It has numerous ravines, ridges, minor streams and small plateaus with varying aspects and degrees of slope.
- **The park encompasses the Patli Dun valley formed by the Ramganga river.**

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- It protects parts of the Upper Gangetic Plains moist deciduous forests and Himalayan subtropical pine forests ecoregions.
- It has a humid subtropical and highland climate.
- **Hence option (b) is the correct answer.**

Q 7.B

- **Territory:**
  - A territory is **a geographical area that an individual marks and defends.**
  - A territory provides a safe place for young to be raised and usually contains a breeding/nesting site at its center. Some organisms only have territories or defend themselves more vigorously during mating season. **A territory can be marked out using movements (displays), sound (calling), or smell (scent).** However, it costs time and energy to defend a territory. For this reason, territories are relatively small and some organisms will only defend their territory during mating season. **Hence, statement 2 is correct.**
  - Example: Wolves mark their territory by howling. All members in the pack will howl together as a warning to neighboring packs. This signals the range of their territory and how well defended it is.
- **Home range:**
  - This is the wider geographical area that an animal will seldom leave (unless they migrate in order to breed elsewhere). A**n animal's home range is usually much larger than its territory.** Unlike territories, a home range is not actively defended and home ranges may overlap. **Hence, statement 1 is not correct.**
  - The size of a home range will depend on:
    - ✓ The density of resources (food)
    - ✓ Population density
    - ✓ Competition with other species
    - ✓ Position in the hierarchy of the individual or group

Q 8.B

- **Every high court (whether exclusive or common) consists of a chief justice and such other judges as the President may from time to time deem necessary to appoint**.Thus, **the Constitution does not specify the strength of a high court and leaves it to the discretion of the president.** Accordingly, the President determines the strength of a high court from time to time depending upon its workload. **Hence, statement 1 is not correct.**
- **The President can transfer a judge from one high court to another after consulting the Chief Justice of India**. On transfer, he is entitled to receive in addition to his salary such compensatory allowance as may be determined by Parliament.
- In 1977, the Supreme Court ruled that the transfer of high court judges could be resorted to only as an exceptional measure and only in the public interest and not by way of punishment. Again in 1994, the Supreme Court held that **judicial review is necessary to check arbitrariness in the transfer of judges. But, only the judge who is transferred can challenge it. Hence statement 2 is correct.**
- In the Third Judges case (1998), the Supreme Court opined that in case of the transfer of high court judges, the Chief Justice of India should consult, in addition to the collegium of four seniormost judges of the Supreme Court, the chief justice of the two high courts (one from which the judge is being transferred and the other receiving him). Thus, the sole opinion of the Chief Justice of India does not constitute the 'consultation' process.
- **The retired permanent judges of a high court are prohibited from pleading or acting in any court or before any authority in India except the Supreme Court and the other high courts (that does not include his own high court).** This ensures that they do not favour anyone in the hope of future favour. **Hence statement 3 is not correct.**

Q 9.C

- **Chirala-Perala agitation happened in 1919 in the Guntur district of Madras Province, now in Andhra Pradesh. The novel protest fired the patriotic spirit of thousands of young men and women across the country to join the nationalist movement.**
- **The British government had merged contiguous villages of Chirala and Perala to convert into municipality in 1919 with the obvious intent of augmenting tax collections, from Rs. 4,000 a year to Rs 40,000. Over 17,000 residents, already groaning under heavy tax burden, vehemently opposed it. But the Justice Party government then in power, headed by the Rajah of Panagal, resolved to have its way at any cost. It was essentially a no-tax campaign. Hence option (c) is the correct answer.**

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- There ensued a kind of war between the people and the Government, each refusing to budge an inch. All the elected councilors resigned and joined the agitation. The Government doggedly carried on the administration with a paid chairman. The residents were jailed for refusing to pay the taxes.
- **Taking up their cause, Duggirala Gopalakrishnayya, a stalwart known for his courage, scholarship and love of independence, devised a novel strategy. He successfully persuaded the people–every man, woman and child, to move out of Chirala-Perala and settle down in Ramanagar, a sprawling camp he had set up on the outskirts. People willingly bartered the comfort and security of their homes for a life in makeshift sheds for almost a year.**
- News of the historic exodus made waves all over the country as a never-before demonstration of people's power. It was an unprecedented step in the history of the country. For eleven months people lived in thatched huts braving the rigours of weather. Gopalakrishnayya and his Ramadandu –a brigade of highly disciplined cadre of volunteers — sustained the morale of the people through bhajans and sankeertans.
- Duggirala Gopalakrishnayya constituted an 'Assembly' comprising members representing each caste and an arbitration court. His aim was to showcase to the world how Swarajya, as conceived by him, would be like.
- Gopalakrishnayya journeyed to Berhampore in 1921 to collect funds for the movement. He was arrested for addressing a meeting defying prohibitory orders and was jailed for a year at Trichinapoly. In the absence of a tall leader like Gopalakrishnayya, the movement started flagging. Unable to continue the agitation and face repression, people returned to their homes in the municipality at the end of eleven months.
- Though the movement failed, the qualities of courage and fearlessness it engendered stood them in good stead in the subsequent stages of the freedom struggle. The Ramadandu came in for high praise by Mahatma Gandhi and other Congress leaders for the exceptional organizational abilities and discipline of its volunteers at the Congress session held in Vijayawada in 1921.

Q 10.D

- **Issi Saaneq: New Dinosaur Species**
  - The two-legged Issi Saaneq **(a type of dinosaur**) lived about 214 million years ago in what is now Greenland. This **medium-sized, long-necked dinosaur** was a predecessor of the sauropods, the biggest land animals ever to have thundered across our planet. **Hence option (d) is the correct answer.**
  - Issi Saaneq differs from all other sauropodomorphs discovered so far but has similarities with dinosaurs found in Brazil, such as the Macrocollum and Unaysaurus, which are almost 15 million years older.
  - It was the first sauropodomorph to have reached altitudes over 40 degrees north.
  - The name of the new dinosaur (Issi Saaneq) pays tribute to Greenland's Inuit language and means "cold bone".
  - The Inuit language, the northeastern division of the Eskimo languages, is spoken in northern Alaska, Canada, and Greenland.
- **Significance of Discovery:**
  - The new species lived during an important time in Earth's history. It will help the researchers to understand the climatic changes according to that time.
  - The fact that this is a new species unique to Greenland is important because it helps researchers to understand more about the range of Late Triassic dinosaurs, as well as how sauropods evolved.

Q 11.B

- Harappan culture zone spoke different languages and dialects. The writing on the seals was probably in the language of the ruling elite. A total of about 3,700 inscribed objects have been found at Harappan. **Most of the writing appears on seals and sealings (seal impressions), some on copper tablets, copper/bronze implements, pottery, and other miscellaneous objects. No inscriptions have been found on the stone.**
- Most of the inscriptions are very short, with an average of five signs. The longest one has 26 signs. Longer inscriptions that consisted of more than one line were sometimes written in the boustrophedon style—with consecutive lines starting in opposite directions (**not necessarily or only right to left**). **Hence, statement 1 is not correct.**
- Over 2,000 seals have been discovered in the Indus cities so far, and it would seem that every important citizen possessed one. Their primary purpose was probably to mark the ownership of property, but they doubtless also served as amulets and were regularly carried on the persons of their owners. Generally, they depict animals, such as the bull, buffalo, goat, tiger, and elephant, or what appear to be scenes from

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religious legend. Also, a seal depicting a mother goddess with a plant growing from the womb has been found. **Hence, statement 2 is correct.**

Q 12.C

- The Cabinet Secretariat functions directly under the Prime Minister. The administrative head of the Secretariat is the Cabinet Secretary who is also the ex-officio Chairman of the Civil Services Board. **Hence statement 1 is correct.**
- It is s responsible for the administration of the Government of India (Transaction of Business) Rules, 1961 and Government of India (Allocation of Business) Rules, 1961 facilitating smooth transaction of business in Ministries/ Departments.
- The Office of the Principal Scientific Adviser to the Government of India (O/o of PSA) was set up in November 1999, primarily to evolve policies, strategies, and missions for the generation of innovations and support systems for multiple applications. It also services the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC). **Office of PSA has been placed administratively under the Cabinet Secretariat in August, 2018. Hence statement 2 is correct.**

Q 13.D

- An efficient, competitive and resilient logistics ecosystem is pivotal to boost exports. Despite multiple challenges, India has made substantial progress in trade-related logistics, reflected in leading global indices.
- **India scored 90.3 per cent in 2021 in United Nations Economic and Social Commission for Asia Pacific's (UNESCAP) latest Global Survey on Digital and Sustainable Trade Facilitation**, a remarkable jump from its score of 78.5 per cent in 2019, on account of improvement in scores of fivekey indicators.
- After evaluation of 143 economies, the 2021 Survey has highlighted India's significant improvement in the scores on all 5 key indicators, as follows:
  - Transparency:100% in 2021 (from 93.33% in 2019)
  - Formalities: 95.83% in 2021 (from 87.5% in 2019)
  - Institutional Arrangement and Cooperation: 88.89% in 2021 (from 66.67% in 2019)
  - Paperless Trade: 96.3% in 2021 (from 81.48% in 2019)
  - Cross-Border Paperless Trade: 66.67% in 2021 (from 55.56% in 2019)
- **Hence, option (d) is correct.**

Q 14.C

- A **session** of Parliament consists of many meetings. Each meeting of a day consists of two sittings, a morning sitting and a post-lunch sitting. A sitting of Parliament can be terminated by adjournment or adjournment *sine die* or prorogation or dissolution (in the case of the Lok Sabha).
- The presiding officer (Speaker or Chairman) declares the House adjourned *sine die*, when the business of a session is completed. Within the next few days, the President issues a notification for **prorogation** of the **session**. However, the President can also prorogue the House while in session. **Unlike an adjournment, prorogation not only terminates a sitting but also a session of the House. Hence, option c is correct.**
- **Adjournment *sine die*** means terminating a sitting of Parliament for an indefinite period. So, when the House is adjourned without naming a day for reassembly, it is called adjournment *sine die.* On the other hand, an adjournment suspends the work in a sitting for a specified time, which may be hours, days or weeks. The power of adjournment as well as adjournment *sine die* lies with the presiding officer of the House. He can also call a sitting of the House before the date or time to which it has been adjourned or at any time after the House has been adjourned *sine die*.
- Rajya Sabha, being a permanent House, is not subject to **dissolution**. Only the Lok Sabha is subject to dissolution. Unlike a prorogation, a dissolution ends the very life of the existing House, and a new House is constituted after general elections are held.

Q 15.D

- The human eye is one of the most valuable and sensitive sense organs. It is like a camera. Its lens system forms an image on a light-sensitive screen called the retina. Light enters the eye through a thin membrane called cornea. It forms the transparent bulge on the front surface of the eyeball.
- **The different parts of the eye**
  - Conjunctiva – the thin membrane covering the eye
  - Sclera – the whites of the eye

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- Cornea – the clear front surface (a fixed focus lens)
- Aqueous humour – the fluid that fills a small chamber just behind the cornea
- Iris – the coloured part of the eye which is a muscular ring
- Pupil – the hole inside the iris ring
- Lens – the fine focus lens
- Vitreous humour – thick, jelly-like fluid that fills the eyeball and keeps it firm
- Retina – the curved back layer of the eye covered in light-sensitive cells, called rods and cones
- Optic nerve – sends information from the retina to the brain.

- **The coloured part of the eye, the iris, is a muscular ring or sphincter which controls the amount of light entering the eye. It causes the pupil to dilate (get bigger) in darkness so as to let in more light. In bright light, the iris causes the pupil to constrict (get smaller). Hence, statement 1 is correct.**
- The retina is a membrane containing sensory receptors that line the internal aspect of the posterior wall of the eyeball, deep to the choroid layer and superficial to the vitreous humor. It is composed of epithelial, glial, and neural cells, which are organised into 10 distinctive layers in which a specialized group of receptors, photoreceptors, can be found.
- Photoreceptors are image-forming cells. They are a specialized type of neuroepithelial cell that is capable of absorbing light and converting it into an electrical signal in the initial stages of the vision mechanism, a process known as phototransduction. Photoreceptors are packed tightly together, allowing a large volume of light to be absorbed across a small area on the retina.
- **Photoreceptors in the retina are classified into two groups, named after their physical morphologies. Rod cells are highly sensitive to light and function in night vision, whereas cone cells are capable of detecting a wide spectrum of light photons and are responsible for colour vision. Rods and cones are structurally compartmentalized. Hence, statements 2 and 3 are correct.**

Q 16.D

- Recently, the second edition of **Water Innovation Challenges** was announced to address the global water woes through innovations.
- It was **announced by the Atal Innovation Mission, NITI Aayog and the Royal Embassy of Denmark to India as part of the Indo-Danish Bilateral Green Strategic partnership.**
- The initiative aims to identify innovative & next-gen solutions to solve proposed challenges in collaboration with corporate and public partners.
- The initiative will engage young talents from leading universities and innovation hubs across the nation to build their skills and apply their technical disciplines and innovation capacity.
- The winners of the challenges will also represent India at the International Water Congress 2022.
- **Hence option (d) is the correct answer.**

Q 17.C

- Recently**, the Inspiration4 Mission was launched by SpaceX. It was launched from NASA's Kennedy Space Center and crew aboard a Crew Dragon capsule** and SpaceX Falcon 9 rocket for an Earth-orbiting mission. **Inspiration4 is the world's first all-civilian mission to orbit. It is largely made up of civilians with no professional space experience, although the crew has undergone basic training. It orbited the Earth at 575km, higher than the International Space Station (408km) and the Hubble space telescope (547km).** This will be the farthest distance traveled by a crewed mission since 2009, when astronauts last went to repair the Hubble. Inspiration4 is the third space flight by a billionaire in 2021. The other two — both suborbital missions — were the flight of Virgin Galactic founder Richard Branson and company employees aboard the Unity 22 mission on July 11, and the flight of Blue Origin founder Jeff Bezos and three other passengers (including noted aviator Wally Funk) flew aboard a New Shepard spacecraft on July 20.
- **Hence option (c) is the correct answer**

Q 18.D

- **The Attorney General (AG) is appointed by the President. He must be a person who is qualified to be appointed a judge of the Supreme Court.** In other words, he must be a citizen of India and he must have been a judge of some high court for five years or an advocate of some high court for ten years, or an eminent jurist, in the opinion of the President. **Hence statement 1 is correct.**
- The term of office of the AG is not fixed by the Constitution. Further, the Constitution does not contain the procedure and grounds for his removal. He holds office during the pleasure of the President.
- The remuneration of the AG is not fixed by the Constitution. He receives such remuneration as the President may determine. **Hence statement 2 is correct.**

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DUTIES AND FUNCTIONS

- To give advice to the Government of India upon such legal matters, which are referred to him by the President.
- To perform such other duties of a legal character that are assigned to him by the President.
- To discharge the functions conferred on him by the Constitution or any other law.
- **However, the Attorney General is not a full-time counsel for the Government. He does not fall in the category of government servants. Further, he is not debarred from private legal practice. Hence statement 3 is not correct.**

Q 19.D

- **Government of India Act of 1935**: Federal Scheme, Office of the governor, Judiciary, Public Service Commissions, Emergency provisions, and administrative details.
- **British Constitution**: Parliamentary government, Rule of Law, legislative procedure, single citizenship, cabinet system, prerogative writs, parliamentary privileges, and bicameralism.
- **Canadian Constitution**: Federation with a strong Centre, vesting of residuary powers in the Centre, the appointment of state governors by the Centre, and **advisory jurisdiction of the Supreme Court. Hence, pair 2 is not correctly matched.**
- **Australian Constitution**: Concurrent List, **freedom of trade, commerce and intercourse**, and joint sitting of the two Houses of Parliament. **Hence**, **pair 3 is not correctly matched.**
- **Weimar Constitution of Germany**: Suspension of Fundamental Rights during Emergency. **Hence, pair 1 is not correctly matched.**

Q 20.C

- The Indian Union Cabinet, aiming to protect and generate employment opportunities, promote healthy competition, protect consumer interests, infuse liquidity, encourage investment, and reduce regulatory burden on Telecom Service Providers ("TSPs"), has **approved several structural and procedural reforms ("Reforms") in the Telecom sector on September 15, 2021.**
- The **nine structural reforms** which aim to build the digital infrastructure, are outlined below:
  - **Rationalization of Adjusted Gross Revenue ("AGR"): AGR definition rationalised and non-telecom revenue will be excluded on prospective basis. As the rationalisation in AGR definition is only prospectively, the telcos need to generate resources, or raise capital, to eventually service this along with payment of bank dues.**
  - Bank Guarantees ("BGs") rationalized: With the huge reduction in BG requirements (80%) against License Fee ("LF") and other similar Levies, one BG will suffice, erasing the need for the customary multiple BGs in different licensed service areas ("LSAs") in the country.
  - Interest rates rationalized/penalties removed: From October 1, 2021, delayed payments of LF/Spectrum Usage Charge ("SUC") will attract interest rate of State Bank of India's Marginal Cost of Funds ("MCLR") plus 2% instead of the former MCLR plus 4%; this interest will be compounded annually instead of monthly; and the penalty and interest on penalty will be removed.
  - For auctions held henceforth, no BGs will be required to secure instalment payments.
  - **In future auctions, the tenure of spectrum has been increased from 20 to 30 years. Hence statement 3 is correct.**
  - For spectrum acquired in future auctions, the surrender of spectrum will be permitted after 10 years.
  - No SUC will be levied for spectrum acquired in future spectrum auctions.
  - Spectrum sharing will be encouraged, and the additional SUC of 0.5% for spectrum sharing removed.
  - **To encourage investment, 100% Foreign Direct Investment ("FDI") under the automatic route will be permitted in the Telecom Sector, but all safeguards will apply. Hence statement 2 is correct**

- **Hence statement 1 is correct.**

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Q 21.A

- **Recently, the Ministry of Electronics and Information Technology has launched India's first indigenous Server called RUDRA developed by the Centre for Development of Advanced Computing (C-DAC) under the National Supercomputing Mission supported by DST.**
- **Rudra Server, an outcome of the National Supercomputing Mission Phase-3 deliverable which aims at design and manufacturing of Supercomputers in India, is secure, reliable, dual Socket based on the current generation of Intel Xcon scalable processor technology and supports accelerated computing.**
- It is poised to demonstrate India's competency to design, develop, build and deliver as per the nation's multidisciplinary computing needs, and has critical strategic and national importance. A wide spectrum of sectors including HPC systems, Hyperscale Data Centres, Edge Computing, Banking & Commerce, Manufacturing, Oil & Gas Industry, Healthcare, Education, Entertainment Industry, Defence and National Security stand to benefit immensely from the indigenously-built server RUDRA.
- The server design can be used for manufacturing classical standalone commercial servers and also as building blocks for building large supercomputing systems of tens of petaflops of computing performance.
    - It is aimed at achieving better energy efficiency, density and architectural features to suit the requirements of the national mission. Indigenous Direct liquid cooling technology is being explored for inclusion in the design for better cooling and energy efficiency.
- **Hence, option (a) is the correct answer.**

Q 22.D

- In the process of soil formation, the small pieces of rocks or particles produced by weathering of rocks get converted into a homogenous matrix via the process of mineralization.
- The roots of the plants invade the soil particles further breaking the particles into fine material.
- The microbes associated with the roots of plants secrete organic acids and humic acids that further assist in the breakdown of rock material to fine soil particles.
- Microorganisms such as bacteria, fungi and actinomycetes assist in the decomposition process. In the process, organic compounds get converted into inorganic nutrients.
- The breakdown of organic compounds leads to the formation of simple products such as carbon dioxide, water, and minerals.
- The process is called mineralization. **Hence mineralization is the conversion of nutrients in organic matter into the mineral inorganic form is termed mineralization. Hence statement 1 is correct.**
- Incompletely decomposed organic material left after mineralization forms the humus which is a dark, homogeneous, amorphous, colloidal substance. Humus gives loose texture to the soil which provides aeration and helps in retaining water and nutrients.
- Humification is the development of **humus from dead organic material,** by the action of saprotrophic organisms which use this dead material as their food source. **Hence statement 2 is correct.**

Q 23.B

- T**he 42nd Amendment Act** of 1976 a**dded four new Directive Principles** to the original list. They require the State:
    - **To secure opportunities for the healthy development of children (Article 39). Hence statement 2 is correct.**
    - To promote equal justice and to provide free legal aid to the poor (Article 39 A).
    - To take steps to secure the participation of workers in the management of industries (Article 43 A).
    - To protect and improve the environment and to safeguard forests and wildlife (Article 48 A).
- **The 44th Amendment Act** of 1978 added one more Directive Principle, which requires the State **to minimize inequalities in income, status, facilities, and opportunities (Article 38). Hence statement 1 is correct.**
- **The 86th Amendment Act** of 2002 changed the subject matter of Article 45 and made elementary education a fundamental right under Article 21 A. The amended directive requires the State **to provide early childhood care and education for all children until they complete the age of six years. Hence statement 3 is correct.**
- T**he 97th Amendment Act** of 2011 added a new Directive Principle relating to co-operative societies. It requires the state to promote voluntary formation, autonomous functioning, democratic control, and professional management of cooperative societies (Article 43B).

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Q 24.C

- Bengal, Madras and Bombay were originally fishing and weaving villages.
- They became important centres of trade due to the economic activities of the English East India Company.
- **Company agents settled in Madras in 1639 and in Calcutta in 1690.**
- **Bombay was given to the Company in 1661 by the English king, who had got it as part of his wife's dowry from the king of Portugal. The Company established trading and administrative offices in each of these settlements.**
- **Hence option (c) is correct answer.**

Q 25.B

- Recently, a research team at the Central University of Jharkhand has used the dye extract of the Kamala fruit to create a low-cost and non-toxic sensitiser for dye-sensitised solar cells.
- **A dye-sensitized solar cell (DSSC) is a low-cost solar cell belonging to the group of thin-film solar cells. Hence statement 1 is correct.**
- It is based on a semiconductor formed between a photo-sensitized anode and an electrolyte, a photoelectrochemical system.
- The modern version of a dye solar cell, also known as the Grätzel cell.
- In the case of synthetic dye, the maximum efficiency of DSSC is from the most popular Ruthenium complex (N719) with **11.9% efficiency and 13% using organic dye. Hence statement 2 is not correct.**
- Dye is the component of DSSC responsible for the maximum absorption of the incident light.
- For the past few years, natural extracts from produce such as **Jamun, pomegranate, spinach, beetroot, hibiscus, green algae and black carrot have been utilised as solar cell dye** and found favour for both scalable and sustainable benefits. **Hence statement 3 is correct.**

Q 26.A

- **The Centre has brought all recognized higher education institutions, irrespective of their accreditation or rankings, under the ambit of the Academic Bank of Credit (ABC) Framework,** enabling students to switch between institutions and multiple entries and exits to and from the program. This will include both central and state universities, Deemed-to-be universities, and autonomous institutions. **Hence statement 1 is correct.**
- The **ABC framework is part of National Education Policy (NEP) 2020,** and will allow higher education institutions to maintain a digital repository of credits earned by students; under ABC, students can choose to study one course in a year in one institution and switch to another one the next year. The framework also allows students to pursue courses online and earn credits.
- While mandatory under NEP 2020, institutions have the flexibility of adopting it at a time of their choice.
- **The validity of credit for courses is a maximum of seven years or the duration specified for a given discipline. Hence statement 2 is not correct.**

Q 27.A

- **Biofertilizers:** The cultured microorganisms packed in some carrier material for easy application in the field are called bio-fertilizers. Thus, the critical input in Biofertilizers is the microorganisms.
- **Benefits of biofertilizers**
  - Bio-fertilizers are living microorganisms of bacterial, fungal, and algal origin. Their mode of action differs and can be applied alone or in combination.
  - Biofertilizers fix atmospheric nitrogen in the soil and root nodules of legume crops and make it available to the plant.
  - They solubilize the insoluble forms of phosphates like tricalcium, iron, and aluminum phosphates into available forms.
  - They scavenge phosphate from soil layers.
  - They produce hormones and antimetabolites which promote root growth.
  - They decompose organic matter and help in mineralization in soil.
  - When applied to seed or soil, biofertilizers increase the availability of nutrients and improve the yield by 10 to 25% without adversely affecting the soil and environment.
- **Types and features of biofertilizers:** Based on the type of microorganism, the bio-fertilizer can also be classified as follows:
  - **Bacterial Biofertilizers:** e.g. Rhizobium, Azospirilium, Azotobacter, Phosphobacteria.
  - **Fungal Biofertilizers:** e.g. Mycorrhiza
  - **Algal Biofertilizers:** e.g. Blue-Green Algae (BGA) and Azolla.

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- **Actinomycetes Biofertilizer:** e.g. Frankia.
- Bio-fertilizer is mostly cultured and multiplied in the laboratory. However, blue-green algae and Azolla can be mass-multiplied in the field.

- **Characteristics Feature of common Biofertilizers**
  - **Rhizobium:** Rhizobium is a relatively more effective and widely used biofertilizer. Rhizobium, in association with legumes, fixes atmospheric nitrogen. The legumes and their symbiotic association with the rhizobium bacterium result in the formation of root nodules that fix atmospheric nitrogen. **Hence pair 3 is correctly matched.**
  - **Azospirillum:** Azospirillum is known to have a close associative symbiosis with the higher plant system. These bacteria have associations with cereals like; sorghum, maize, pearl millet, finger millet, foxtail millet other minor millets, and also fodder grasses, and also sugarcane. **Hence pair 1 is correctly matched.**
  - **Azotobacter:** It is a common soil bacterium. A. chrococcum is present widely in Indian soil. Soil organic matter is the important factor that decides the growth of these bacteria.
  - **Blue-Green Algae (BGA): Blue-green algae are referred to as rice organisms because of their abundance in the rice field.** Many species belonging to the genera, Tolypothrix, Nostic, Schizothrix, Calothrix, Anoboenosois, and Plectonema are abundant in tropical conditions. Most of the nitrogen fixation BGA are filamentous, consisting of a chain of the vegetative cell including specialized cells called heterocyst which function as a micronodule for synthesis and nitrogen fixing machinery. **Hence pair 2 is correctly matched.**

List of commonly produced bio-fertilizers in India

Name	Crops suited	Benefits usually seen	Remarks
Rhizobium strains	Legumes like pulses, groundnut, soybean	10-35% yield increase, 50-200 kg N/ha.	Fodders give better results. Leaves residual N in the soil.
Azotobacter	Soil treatment for non-legume crops including dry land crops	10-15% yield increase-adds 20-25 kg N/ha	Also controls certain diseases.
Azospirillum	Non-legumes like maize, barley, oats, sorghum, millet, Sugarcane, rice etc	10-20% yield increase	Fodders give higher/enriches fodder response. Produces growth promoting substances. It can be applied to legumes as co-inoculant
Phosphate Solubilizers (there are 2 bacterial and 2 fungal species in this group)	Soil application for all crops	5-30% yield increase	Can be mixed with rock phosphate.
Blue-green algae and Azolla	Rice/wet lands	20 -30 kg N/ha, Azolla can give biomass up to 40-50 tonnes and fix 30-100 kg N/ha	Reduces soil alkalinity, can be used for fishes as feed. They have growth promoting hormonal effects.
Microhizae (VAM)	Many trees, some crops, and some ornamental plants	30-50% yield increase , enhances uptake of P. Zn, S and Water.	Usually inoculated to seedlings.

Q 28.B

- Gravitational force is the universal force of attraction acting between all matter. It is by far the weakest known force in nature and thus plays no role in determining the internal properties of everyday matter.
- On the other hand, through its long reach and universal action, it controls the trajectories of bodies in the solar system and elsewhere in the universe and the structures and evolution of stars, galaxies, and the whole cosmos.
- **Every object in the universe attracts every other object with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between them.**
  - **The force is along the line joining the centres of two objects.**
- The important properties of Gravitational force are
  - The gravitational force between two objects forms an action and reaction pair.
  - **It is always attractive. The gravitational force is never repulsive.**
  - **It is a central force that acts along the line joining the centers of the two objects.**
  - It is a conservative force that is it depends upon initial and final positions, not on the path.

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- It is a long-range force.
- **It is independent of the presence or absence of other objects in the neighborhood.**
  - ✓ **It only depends upon the masses of two objects and the distance between their centres. It is not affected by other objects present nearby.**
- **It is independent of the nature of the intervening medium between the two objects.**
- It does not depend upon the nature and the size of the two objects till their masses remain the same and the distance between their centres remains fixed. **Hence, option (b) is the correct answer.**

Q 29.B

- From 1870 to 2019, the United States of America, European Union-27, Russia, United Kingdom, Australia, Canada, and Japan, with less than 15 percent of the world's population (in 2019), contributed 61 percent of the total emissions.
- Once you add China to this, the contribution rises to **74 percent of the total Carbon dioxide emissions by some 34 percent of the world's population.**
- **India** has taken up a mere **3.16 percent of the total share of emissions during this period,** despite having 18 percent of the world's people. **Hence statement 1 is not correct.**
- From 1870-1989, the United States of America alone contributed 31.26 percent of the emissions, and from 1989-2019, it contributed to 19.32 percent of the emissions.
- **The percentage share of the USA from 1870-2019 was the highest at 24.92 percent,** followed by European Union at 17.29 percent. **Hence statement 2 is correct.**

PAST PRIVILEGE

The developed world grew on unfettered fossil fuel consumption and CO_2 emissions since the 1870s, leaving little carbon space for the rest of the world

	% of total emissions for BCC (1870-1989)	% of total emissions for AC (1990-2019)	% of total emissions for BCC + AC (1870-2019)	% share in the world population in 2019
US	31.26	19.32	24.92	4.28
EU	23.21	12.06	17.29	5.83
Russia	8.31	5.72	6.94	1.88
UK	7.18	1.80	4.32	0.87
Japan	3.59	4.24	3.93	1.65
Canada	2.17	1.88	2.02	0.49
Australia	0.94	1.25	1.11	0.33
7 historical polluters	76.66	46.28	60.53	15.33
+ China	5.11	20.72	13.40	18.21
7 historical polluters + China	81.77	67.00	73.93	33.54
Rest of world (excluding China)	18.23	33.25	26.07	66.46
of which				
India	1.36	4.76	3.16	17.81
South Africa	1.08	1.42	1.26	0.76
South Korea	0.38	1.62	1.04	0.67
Brazil	0.58	1.23	0.92	2.75
Vietnam	0.09	0.33	0.22	1.26
World Emissions in gigatonnes				
World	769.92	871.78	1641.69	-

Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

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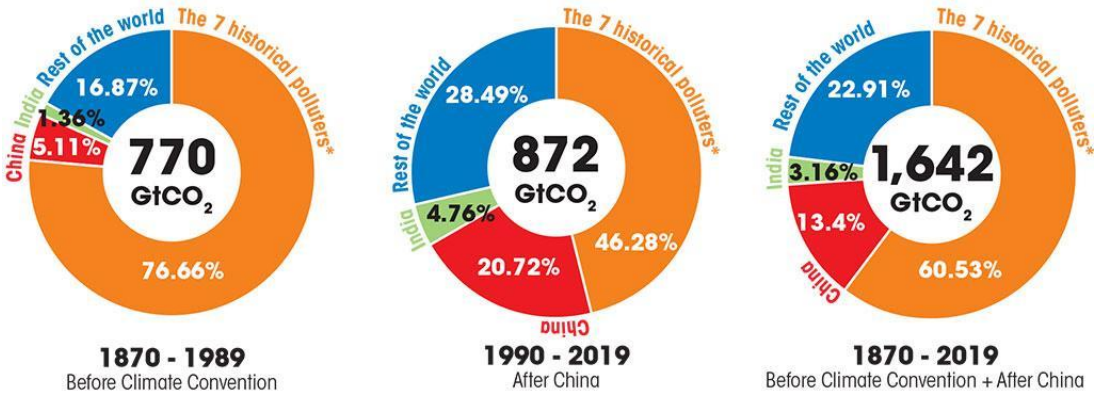
PROBLEMATIC TWO

The developed countries and China are responsible for over 70 per cent of CO_2 emissions so far



*US, UK, Russia, Australia, Japan, Canada and EU-27
Source: Analysis by *Down to Earth* and Centre for Science and Environment, Delhi, based on data from Climate Watch and Our World in Data

Q 30.A

- **A Pigovian (Pigouvian) tax** is a tax assessed against private individuals or businesses for engaging in **activities that create adverse side effects for society.** Adverse side effects are those costs that are not included as a part of the product's market price. These **include environmental pollution, strains on public healthcare from the sale of tobacco products, and any other side effects that have an external, negative impact.** The purpose of the Pigovian tax is to redistribute the cost back to the producer or user of the negative externality. A carbon emissions tax or a tax on plastic bags are examples of Pigovian taxes. Negative externalities are not necessarily "bad." Instead, a negative externality occurs whenever an economic entity does not fully internalize the costs of their activity. In these situations, society, including the environment, bears most of the costs of economic activity. Thus Pigovian Tax is aimed to **discourage negative production externalities in the economy. Hence option (a) is the correct answer**

Q 31.C

- Minority institutions have the fundamental right under Article 30 of the Constitution to establish and administer their educational institutions according to their choice such as:
  - To choose its governing body in whom the founders of the institution have faith and confidence to conduct and manage the affairs of the institution and to appoint teaching and non-teaching staff. However, the **Supreme Court held** that the **state is well within its rights** to introduce a regulatory regime in the "national interest" to provide minority educational institutions with well-qualified teachers in order for them to "achieve excellence in education." **Hence statement 2 is not correct.**
  - **To admit the students of its community. Non-minority students cannot be forced upon it.** Neither the policy of reservation (under Article 15(5)) for the socially and educationally backward classes or the Scheduled Castes or the Scheduled Tribes in educational institutions in admission can be enforced by the State nor any quota or percentage of admissions can be carved out to be appropriate by the State in a minority educational institution. **But if the institution is receiving any financial aid from the State then Sub-Article (2) of Article 29 of the Constitution obligates the management to admit non-minority students to a reasonable extent. Hence statement 1 is correct.**
  - To receive a reasonable fee structure of its own.
  - To take disciplinary action against any member of its erring staff.
  - **Further, a minority educational institution covered under Article 30(1) of the Constitution including a Madarsa is exempted from the purview of the Right of Children to Free and Compulsory Education Act (2009). Hence, statement 3 is correct.**
- **The Supreme Court in the TMA Pai Foundation case, 2002 said that Article 30(1) was neither absolute nor above the law.**

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Q 32.B

- **External debt** is the portion of a country's debt that is borrowed from foreign lenders, including commercial banks, governments, or international financial institutions. India's external debt as at end-September 2021, estimated at US$ 593.1 billion, grew by US$ 22.3 billion (3.9 per cent) over the level as at end-June 2021.
- **External Debt to GDP ratio in the last 5 years:**

Year (March end)	External Debt to GDP ratio
2016	23.4
2017	19.8
2018	20.1
2019	19.9
2020	20.6
2021	21.1

- **Hence statement 1 is not correct.**
- As per the RBI statistics, the **total Short term Debt** at the end-June 20021, **$102.5 Billion, whereas the total Long term Debt is $450.2 Billion. Hence statement 2 is not correct.**
- Commercial borrowings, the largest component of external debt, at US$ 218.8 billion, recorded a quarter-over-quarter (q-o-q) positive growth of 2.5 percent over the level a quarter ago. The NRI deposits, the second largest component, at US$ 141.6 billion were at the same level as at end of the previous quarter.
- As far as currency composition of external debt is concerned, US dollar denominated debt remained the largest component of India's external debt, with a share of 51 per cent at end-September 2021, followed by the Indian rupee.
- The **foreign exchange reserves as a ratio to external debt** crossed 100 percent after 11 years since 2010, and **stood at 107.1 per cent as at end-September 2021. Hence statement 3 is correct.**
- **Hence option (b) is the correct answer.**

Q 33.A

- Ratios often used in determining the financial health of a financial institution or a company are:
- **For a company:**
- **Current Ratio:**
  - The current ratio is a liquidity ratio that measures a company's ability to pay short-term obligations or those due within one year.
    - ✓ **Current ratio = Current assets / Current liabilities**
  - The current ratio measures a company's ability to pay off its current liabilities (payable within one year) with its current assets such as cash, accounts receivable, and inventories. **The higher the ratio, the better the company's liquidity position. Hence statement 1 is correct.**
- **Interest Coverage Ratio**
  - **Interest coverage ratio = Operating income (or EBIT) / Interest expense**
  - The interest coverage ratio measures the company's ability to meet the interest expense on its debt, which is equivalent to its earnings before interest and taxes (EBIT). The higher the ratio, the better the company's ability to cover its interest expense.
- **For Banks:**
- **Provisioning Coverage Ratio (PCR):**
  - Provisions are set aside by businesses in case they are anticipating any losses or unexpected bad loans. The provisioning **coverage ratio is the percentage of bad assets/classified assets** that the bank has to provide for (keep the money) from their own funds. A high PCR ratio (ideally above 70%) means most asset quality issues have been taken care of and the bank is not vulnerable.
- **Capital Adequacy Ratio (CAR):**
  - It is the ratio of a bank's capital in relation to its risk-weighted assets and current liabilities. This is a measure of a bank's ability to meet its obligations. A high CAR means the bank can absorb losses without diluting capital. **Hence statement 2 is not correct.**
- **CASA ratio:**
  - It is the proportion of current account and savings account deposits in the total deposits of the bank. A low CASA ratio means the bank relies heavily on costlier wholesale funding, which can hurt its margins.

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Q 34.C

- **Statement 1 is not correct:** Thunderstorms are caused by the intense convection of air on moist hot days i.e. intense updraft of rising warm air. They are of short duration, occurring over a small area
- **Statement 2 is not correct:** Thunderstorms are always associated with cumulonimbus cloud. The cloud can achieve a substantial great height. When clouds increase to such a height where sub zero temperature prevails hails are formed and they come down as hailstorms. So hailstorms are not always associated with thunderstorms.
- **Statement 3 is correct:** Thunderstorm is essential condition for a tornado to develop. From severe thunderstorms sometimes spiralling wind descends like a trunk of an elephant with great force, with very low pressure at the centre. Such a phenomenon is called a tornado.

Q 35.C

- **The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO)** establishes minimum standards for the regulation by national governments of different forms of intellectual property (IP) as applied to nationals of other WTO member nations. TRIPS was negotiated at the end of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) between 1989 and 1990 and is administered by the WTO.
- The TRIPS Agreement is part of the **"single undertaking"** resulting from the Uruguay Round negotiations. That implies that the TRIPS Agreement applies to all WTO members. It also means that the provisions of the agreement are subject to the integrated WTO dispute settlement mechanism which is contained in the **Dispute Settlement Understanding.**
- Article 31 allows compulsory licensing and **government use of a patent without the authorization of its owner.** But this can only be done under a number of conditions aimed at protecting the legitimate interests of the right holder. **Hence statement 1 is correct.**
- Article 27.3(b) allows members to **exclude some types of plant and animal inventions from patenting in their countries.** More specifically, it allows them to exclude from patentability "plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. **Hence statement 2 is not correct.**
- The **TRIPS Council comprises all WTO members.** It is responsible for monitoring the operation of the agreement, and, in particular, how members comply with their obligations under it. **Hence statement 3 is not correct.**
- **Hence option (c) is the correct answer.**

Q 36.B

- Western disturbance (WD) is an extra-tropical storm that originates in the **Mediterranean region.**
- **30% of annual precipitation** over the North-West Indian region **(J & K, Ladakh, Himachal Pradesh &Uttarakhand)** is received during winter and it is mostly associated with Western Disturbances. **Hence statement 1 is not correct.**
- It also causes rainfall over the adjoining places of north India.
- Precipitation associated with Western Disturbances (WDs) influences Himalayan climate, glaciers, snow-water storage, flora, fauna, agricultural crops and human inhabitants etc.
- The adverse weather elements associated with Western Disturbances are as follows:
- Intense precipitation in the form of **snow, rain or hail leading** to landslides, avalanches and damage to agriculture and manmade structures.
- **Dense to very dense fog events** leading to interruption in aviation/rail/road transport services. **Hence statement 2 is correct.**
- Cold Wave to Severe Cold Wave and Cold Day to Severe Cold Day conditions after the passage of western disturbances.
- Precipitation from the western disturbances is very vital for the **Rabi Crop over northwest India**. **Hence statement 3 is correct.**
- Also snowfall/snowmelt in the Hilly regions contribute to river flow and drinking water for people living downstream.

Q 37.C

- **The primary market deals with new securities** being issued for the first time. It is also known as the new issues market. There are various methods of floating new issues in the primary market:
  - **Offer through Prospectus:** Offer through prospectus is the most popular method of raising funds by public companies in the primary market.
  - **Private placement:** Private placement is the allotment of securities by a company to institutional investors and some selected individuals. It helps to raise capital more quickly than a public issue.

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- **Rights Issue:** This is a **privilege given to existing shareholders to subscribe** to a new issue of shares according to the terms and conditions of the company. The shareholders are offered the 'right' to buy new shares in proportion to the number of shares they already possess. **Hence statement 1 is not correct.**

- A depository is a specialist financial entity that facilitates investment in securities markets. In the depository a securities account can be opened, all shares can be deposited, they can be withdrawn/ sold at any time. In India, there are two depositories. **National Securities Depositories Limited (NSDL)** is the first and largest depository presently operational in India. It was **promoted as a joint venture of the IDBI, UTI, and the National Stock Exchange. Hence statement 2 is not correct.**
- **The Central Depository Services Limited (CDSL)** is the second depository to commence operations and was promoted by the **Bombay Stock Exchange and the Bank of India.** Both these national level depositories operate through intermediaries who are electronically connected to the depository and serve as contact points with the investors and are called depository participants.
- **The OTCEI is a company incorporated under the Companies Act 1956.** It was set-up **to provide small and medium companies** an access to the capital market for raising finance in a cost effective manner. This exchange is established on the lines of NASDAQ, the OTC exchange in USA. Thus, in the OTC exchange, trading takes place when a buyer or seller walks up to an OTCEI counter, taps on the computer screen, finds quotes and effects a purchase or sale depending on whether the prices meet their targets. There is no particular market place in the geographical sense. **Hence statement 3 is correct.**
- **Hence option (c) is the correct answer.**

Q 38.B

- **Gaganyaan Mission is a crewed orbital spacecraft that is expected to carry people into space.** It envisages undertaking the demonstration of human spaceflight to Low Earth Orbit (LEO) in the short term and will lay the foundation for a sustained Indian human space exploration programme in the long run. The objective of the Gaganyaan programme is to demonstrate the indigenous capability to undertake a human space flight mission to LEO. **Hence, statement 1 is correct.**
- With the launch of this mission, India could potentially become the fourth country to send a man to space, after the erstwhile USSR, the US and China. **Hence, statement 2 is correct.**
- **Recently, the Indian Space & Research Organisation (Isro) successfully test-fired the Vikas engine that will power the ambitious Gaganyaan mission into space. The High Thrust Vikas Engine for the Gaganyaan mission was test-fired for a duration of 25 seconds at Isro's Propulsion Complex (IPRC), Mahendragiri.**
  - Vikas Engine is the workhorse liquid rocket engine powering the second stage of India's Polar Satellite Launch Vehicle (PSLV), second stage and the four strap-on stages of the Geosynchronous Launch Vehicle (GSLV) and the twin-engine core liquid stage (L110) of GSLV Mk-III. Thus Vikas engine is not a cryogenic engine. **Hence, statement 3 is not correct.**
- The Gaganyaan Orbital Module (OM) has two parts the Crew module (CM) and the Service module (SM) and weighs about 8,000 kg. While in orbit, the OM will be orbiting the Earth with a velocity of about 7,800 m/s. The Orbital module will be launched by a Human Rated Launch Vehicle (HRLV), which is a modified version of GSLV MK-III launch vehicle.

Q 39.D

- **Seychelles**, island republic in the western Indian Ocean, comprising about 115 islands, with lush tropical vegetation, beautiful beaches, and a wide variety of marine life. Situated between **latitudes 4° and 11° S** and longitudes 46° and 56° E, the major islands of Seychelles are located about 1,000 miles (1,600 km) east of Kenya and about 700 miles (1,100 km) northeast of Madagascar.
- **Mauritius** (**20.3484° S**, 57.5522° E), island country in the Indian Ocean, located off the eastern coast of Africa. Physiographically, it is part of the Mascarene Islands. Mauritius also claims sovereignty over the Chagos Archipelago (including Diego Garcia), some 1,250 miles (2,000 km) to the northeast, although this claim is disputed by Britain.
- **Réunion (21° 06' S**, 55° 36' E), officially Department of Réunion, French Département d'Outre-Mer de la Réunion, island of the Mascarene Islands and a French overseas département and overseas region in the western Indian Ocean. It is located about 420 miles (680 km) east of Madagascar and 110 miles (180 km) southwest of Mauritius.
- **Hence, the option (d) is the correct answer.**

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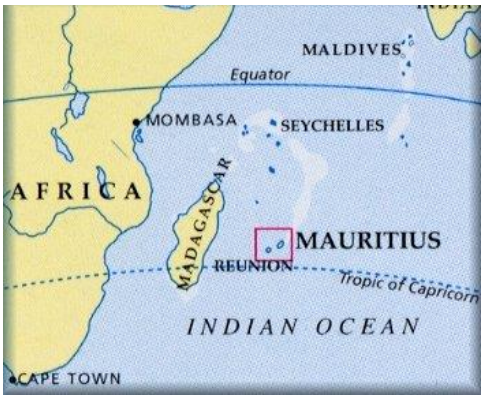

Q 40.B

- Recently, **the Ministry of Micro, Small & Medium Enterprises (MSME) has launched an e-National Level Awareness Programme SAMBHAV. Hence statement 2 is correct.**
- It is a mass outreach program under the Ministry of MSME in which **students from different colleges/ITIs from all parts of the country will be encouraged by 130 field offices of the Ministry to take up entrepreneurship.** During the campaign, the college students will be made aware of the various schemes being implemented by the Ministry of MSME through Audio/Video film presentations. The main objective is to promote engagement of the youth in promoting entrepreneurship, boost domestic manufacturing with a view to pushing economic growth. **Hence statement 1 is not correct.**

Q 41.A

- After Gandhi' ji's arrest (March 1922), there was disintegration, disorganisation and demoralisation among nationalist ranks. One section led by C.R. Das, Motilal Nehru and Ajmal Khan wanted an end to the boycott of legislative councils so that the nationalists could enter them to expose the basic weaknesses of these assemblies and use these councils as an arena of political struggle to arouse popular enthusiasm.
- Those advocating entry into legislative councils came to be known as the Swarajists, while the other school of thought led by Vallabhbhai Patel, Rajendra Prasad, C. Rajagopalachari and M.A. Ansari came to be known as the 'No-changers'. The 'No-changers' opposed council entry, advocated, concentration on constructive work, and continuation of boycott and non cooperation, and quiet preparation for resumption of the suspended civil disobedience programme.
- **The differences over the question of council entry between the two schools of thought resulted in the defeat of the Swarajists' proposal of 'ending or mending' the councils at the Gaya session of the Congress (December 1922).** C.R Das and Motilal Nehru resigned from the presidentship and secretaryship respectively of the Congress and announced the formation of Congress-Khilafat Swarajya Party, with C.R. Das as the president and Motilal Nehru as one of the secretaries.**The rift between the pro-changers and no-changers was resolved in meeting in Delhi in September 1923 Session. Hence statement 1 is correct and statement 2 is not correct.**
- **Gandhiji threatened to launch Civil Disobedience Movement from bardoli, in February 1922 after Congress appointed him as sole authority on this issue at Ahmedabad session in 1921.**

Q 42.C

- Sudden withdrawal of the Non-Cooperation Movement left many disillusioned and led to rise of **revolutionary terrorism in 1920s**
- Two separate strands of revolutionary terrorist groups emerged during this period
  - one operated in Punjab-UP-Bihar
  - the other in Bengal
- **Punjab-UP-Bihar:** The revolutionary terrorist activity in this region was dominated by the Hindustan Republican Association/Army or HRA
  - The HRA was founded in October 1924 in Kanpur by **Ramprasad Bismil, Jogesh Chandra Chatterjee and Sachin Sanyal. Hence, statement 1 is correct.**
  - It was aimed to organise an armed revolution to overthrow the colonial government and establish in its place a Federal Republic of United States of India whose basic principle **would be adult franchise. Hence, statement 2 is correct.**

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- The most important "action" of the HRA was the Kakori train robbery.But Government crackdown after the Kakori robbery led to arrests of many.
- After the kakori incident, HRA was renamed as Hindustan Socialist Republican Association or HSRA.
- HSRA was behind the murder of Saunders, central legislative assembly bomb etc.,

Q 43.A

- Plastic (polyethylene) pollution is a severe cause of the deterioration of a healthy environment. For example, ingestion of plastics in the animal gut, clogging of water canals, and retarded solid waste management. Many conventional methods of polyethylene degradation including UV photooxidation, thermal oxidation, incineration, chemical oxidation, and landfill are being practiced.
- However, these methods are not feasible, costlier, and not a complete solution for this global issue. Therefore, a plausible, alternative solution for this issue is biodegradation. Microbes such as bacteria, fungi and algae are involved in polyethylene degradation in its natural habitat.
- **Recently an algae named Uronema africanum Borge was isolated from a waste plastic bag collected from a domestic waste dumping site in a freshwater lake in Chennai. This algae has initiated degradation of the plastic sheet within 30 days of incubation.**
- **Hence, option (a) is the correct answer.**

Q 44.B

- Sufism is a mystical form of Islam, a school of practice that emphasizes the inward search for God and shuns materialism.
- **Contrary to the ulema were the Sufis. The Sufis were mystics.** They were pious men who were shocked at the degeneration in political and religious life. They opposed the vulgar display of wealth in public life and the readiness of the ulema to serve "ungodly" rulers. **Hence statement 1 is not correct.**
- Many began to lead a retired ascetic life, having nothing to do with the state. **The Sufi philosophy also differed from the ulema. The Sufis laid emphasis upon free thought and liberal ideas.**
- It must be noted that the Sufi saints were not setting up a new religion, but were preparing a more liberal movement within the framework of Islam. They owed their allegiance to the Quran as much as the ulema did.
- **The Sufis laid emphasis upon free thought and liberal ideas. They were against formal worship, rigidity and fanaticism in religion.** The Sufis turned to meditation in order to achieve religious satisfaction. Like the Bhakti saints, the Sufis too interpreted religion as 'love of god' and service of humanity. The Sufis organised samas (a recital of holy songs) to arouse mystical ecstasy. **Hence statement 2 is correct.**
- **The advent of Sufism in India is said to be in the eleventh and twelfth centuries, around the phase of Turkish Invasion of India and much before the Mughal empire. Hence, statement 3 is not correct**.
- In course of time, the Sufis were divided into different silsilahs (orders) with each silsilah having its own pir (guide) called Khwaja or Sheikh. The pir and his disciples lived in a khanqah (hospice). A pir nominated a successor or wali from his disciples to carry on his work.

Q 45.C

- Beginning with Mizoram, the Union Government **recently launched a Mobile Covid testing facility - a first-of-its-kind Mobile Diagnostic Laboratory called I-LAB capable of performing both RT-PCR and ELISA tests** - for Northeast India. The mobile lab has the bio-safety facility and is capable of performing both RT-PCR and ELISA tests. It can also be utilised for testing other infectious diseases like TB, HIV, and therefore will remain relevant even in post-Covid times. It has been developed with support from the Department of Biotechnology (DBT) under the Ministry of Science & Technology, government of India, and is meant to provide Covid testing access to rural and remote parts of Northeast.
- **Hence option (c) is the correct answer**

Q 46.A

- Jainism came into prominence in 6th century B.C., when Lord Mahavira propagated the religion. **Jains believe in the existence of twenty four tirthankaras including Mahavira, not before him.** These twenty-four teachers were called Tirthankaras-people who had attained all knowledge (Moksha) while living and preached it to the people. **Hence statement 1 is not correct.**
- The word 'Jain' is derived from jina or jaina which means the 'Conqueror'. There were 24 Tirthankaras (teachers) & the first Tirthankara was **Rishabhanath or Rishabhadev**.**The 23rd Tirthankara was Parshvanatha who was born in Varanasi. Hence statements 2 and 3 are correct.**

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- The last–24th Tirthkara was Vardhaman Mahavira.The doctrine of Jaina is older than the Buddhist doctrine.

Q 47.B

- **Good Governance Index 2021 (GGI) was released on the occasion of the Good Governance Day (25th December, 2021).**
- **The index was prepared by the Department of Administrative Reforms and Public Grievances (DARPG), Ministry of Personnel, Public Grievances and Pensions. Hence, statement 1 is correct.**
- GGI is a comprehensive and implementable framework to assess the State of Governance across the States and UTs which enables ranking of States/Districts. It is **based on ten sectors** - Agriculture and Allied Sectors, Commerce & Industries, Human Resource Development, Public Health, Public Infrastructure & Utilities, Economic Governance, Social Welfare & Development, Judicial & Public Security, Environment and Citizen-Centric Governance. **However, GGI is envisaged to be a bi-annual exercise. Hence, statement 2 is not correct.**
- **The GGI 2021 says that 20 States have improved their composite GGI scores over the GGI 2019 index scores. Gujarat, Maharashtra and Goa top the composite rank score covering 10 sectors. Hence, statement 3 is correct.**

Q 48.B

- **Martand Sun temple, Kashmir:**
  - The Martand Sun Temple is a Kashmiri Hindu temple dedicated to Surya (the chief solar deity in Hinduism) and built during the 8th century CE.
  - **The Martand Sun Temple was built by the third ruler of the Karkota Dynasty, Lalitaditya Muktapida, in the 8th century CE.** It is said to have been built during 725-756 CE.
  - The temple was completely destroyed on the orders of Muslim ruler Sikandar Butshikan in the early 15th century, with demolition lasting a year.
- **The Sun Temple at Konârak, located on the eastern shores of the Indian subcontinent at Orissa.**
  - It is an outstanding testimony to the 13th-century Hindu Kingdom of Orissa, under the reign of Narasimha Deva I (AD 1238-1264).
  - The Sun Temple is the culmination of Kalingan temple architecture, with all its defining elements in complete and perfect form.
- **Suryanarayana Swamy temple, Arasavalli (Andhra Pradesh):**
  - Arasavalli Sun Temple is a 7th-century AD Sun Temple at Arasavalli in Andhra Pradesh, India.
  - **The walls in the temple are inscribed saying the creator of the temple was the ruler Devendra Varma,** stating it was built in the time period known to them as the 7th century.
- **Hence option (b) is the correct answer.**

Q 49.D

- **Freshwater turtles:**
  - Freshwater turtles are reptiles, like snakes and lizards
  - Their shell is mainly used for protection from predators
  - They all need access to both water and land to complete their life cycle
  - They inhabit a variety of freshwater habitats, from all sorts of wetlands to lakes, streams, and rivers
- **Ecological Significance of freshwater turtles:**
  - Freshwater turtles are known for their ecosystem services like **keeping rivers, ponds, and freshwater sources clean by eating algal blooms and scavenging on dead matter**. They play an important role in being predators as well as prey.
  - They **control invasive fishes by eating them**, and at the same time, they are an important source of protein for a lot of animals that feed on turtle eggs and juvenile turtles. **Hence statement 3 is correct.**
  - They **are scavengers**, also sometimes known as **"vultures of the aquatic ecosystem"** keeping the ecosystem clean and an important part of the aquatic food chain. A healthy pond ecosystem usually has a flap shell or some kind of freshwater turtle. **Hence statement 1 is correct.**
  - Freshwater turtles can be important for **dispersing the seeds of dozens of plant species**. Some of them may even be the primary seed dispersal agents for specific plants. **Hence statement 2 is correct.**
- **Turtle species found in India**
  - India has a total of 29 species of freshwater turtles (24) and tortoises (5). The latest addition to the list was as recent as last year when a new record of the Impressed Tortoise, only known in China and Myanmar until then, was found in Arunachal Pradesh. Many of these 29 species are protected under

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the Wildlife Protection Act with up to 11 species having Schedule 1 protection, the same as that of a tiger.

Location	Species Recorded	Confirmed Nesting	Known nesting beaches
West Coast (Gujarat, Maharashtra, Goa, Karnataka and Kerala	Green, Olive ridley and Leatherback	Olive ridley and Green	**Gujarat:** Mandvi in Kutch, Sea beach between Okay and Okha Madhi, Bhaidar, Beyt, Nora and Chank Islands. **Maharashtra:** Olive ridley nest near Gorai, Kihim, Manowrie and Versova.
East Coast (West Bengal, Orissa, Andhra Pradesh and Tamil Nadu)	Olive ridley, Green, Hawksbill, Leatherback and Loggerhead	Olive ridley	**Tamil Nadu:** Nest in Gulf of Mannar, Point Calimere, and 50 km coastline south of Madras. **Andhra Pradesh:** Kakinada coast, sea beach near the mouth of Godavari and Krishna and near Visakhapattanam. **Orissa:** All along the coast south of Dhamra river mouth. Two mass nesting beaches at Gahirmatha and Rushikulya. **West Bengal:** In the sandy beaches of Sunderbans.
Islands (Andaman & Nicobar Islands and Lakshadweep)	Olive ridley, Green Leatherback, Hawksbill and Loggerhead	Olive ridley, Green, Hawksbill and Leatherback	Great Nicobar, Little Andaman, Rutland, Middle Andaman, Katchal, South Sentinel, south Reef and Teris Islands

- **Northern river terrapin:**
  - ✓ A decade ago, the presence of Northern river terrapin had declined to be "undetectable in the wild" in West Bengal and Odisha. Since then, officials of the Sunderbans Tiger Reserve and experts from Turtle Survival Alliance (TSA), are running a recovery program, through captive conservation breeding.
  - ✓ The Northern river terrapin is set to get a new home – three freshwater ponds in the **Sunderbans Tiger Reserve.** The turtles will be released with satellite transmitters to determine survival and dispersal.
  - ✓ It is listed in the **Critically Endangered (CR) list of IUCN** and is **protected under Schedule I of the Wildlife (Protection) Act 1972,** India. It is also included **in Appendix I of the Convention on International Trade in Endangered Species (CITES),** making international trade in this species illegal.

Q 50.B

- Estimates Committee was constituted in 1950 on recommendations of John Mathai (finance minister) to examine the estimates included in the budget and suggest 'economies' in public expenditure.
- **Public Accounts Committee was first set up in 1921 under provisions of the Government of India Act, 1919 to examine the annual audit reports of the Comptroller and Auditor General of India (CAG).**
- Committee on Public Undertakings was created in 1964 on the recommendation of the Krishna Menon Committee to examine reports and accounts of public undertakings.
- Ethics Committee was constituted in Rajya Sabha in 1997 and in Lok Sabha in 2000 to enforce the code of conduct of members of Parliament.
- **Hence, option (b) is the correct answer.**

Q 51.B

- **Exceptional Grant: It is granted for a special purpose and forms no part of the current service of any financial year. Hence, statement 1 is not correct**.
- Vote of Credit: It is granted for meeting an unexpected demand upon the resources of India, when on account of the magnitude or the indefinite character of the service, the demand cannot be stated with the details ordinarily given in a budget. Hence, it is like a blank cheque given to the Executive by the Lok Sabha.
- **Token Grant: It is granted when funds to meet the proposed expenditure on a new service can be made available by reappropriation**. A demand for the grant of a token sum (of Re 1) is submitted to the

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vote of the Lok Sabha and it assented, funds are made available. Reappropriation involves transfer of funds from one head to another. It does not involve any additional expenditure. **Hence, statement 2 is correct**.

Q 52.B

- A negative bond yield is when an investor receives less money at the bond's maturity than the original purchase price for the bond. A negative bond yield is an unusual situation in which issuers of debt are paid to borrow. In other words, the depositors, or buyers of bonds, are effectively paying the bond issuer a net amount at maturity instead of earning a return through interest income.
- There are various distinct reasons for the purchase of negative-yielding bonds:
  - **Asset Allocation and Pledged Assets**: Many hedge funds and investment firms that manage mutual funds must meet certain requirements, including asset allocation. Asset allocation means that the investments within the fund must have a portion allocated to bonds to help create a diverse portfolio. Allocating a portion of a portfolio to bonds is designed to **reduce or hedge the risk of loss from other investments, such as equities.** As a result, these funds must own bonds, even if the financial return is negative. Bonds are often used to pledge as collateral for financing and as a result, need to be held regardless of their price or yield. **Hence statement 3 is correct.**
  - **Safe Haven Assets:** Investors might also be interested in negative bond yields if the loss is less than it would be with another investment. **In times of economic uncertainty, many investors rush to buy bonds because they're considered safe-haven investments.** These purchases are called the flight-to-safety-trade in the bond market. During such a time, investors might accept a negative-yielding bond because the negative yield might be far less of a loss than a potential double-digit percentage loss in the equity markets. For example, Japanese Government Bonds (JGB) are popular safe-haven assets for international investors and have, at times, paid a negative yield. **Hence statement 1 is correct.**
  - **Currency Gain and Deflation Risk: Investors at times believe that they can make money even with negative yields.** For example, foreign investors believe the currency's exchange rate will rise, which would offset the negative bond yield. In other words, **a foreign investor would convert their investment to a country's currency when buying the government bond and convert the currency back to the investor's local currency when selling the bond.** The investor would have a gain or loss merely from the currency exchange fluctuation, irrespective of the yield and price of the bond investment. **Hence statement 2 is correct.**

Q 53.B

- **To modernize railways and to also push for 'Atmanirbhar Bharat', the government has proposed that 2,000 km of the rail network will be brought under the indigenous world-class technology named 'Kavach'(armor).**
- Kavach is an anti-collision device (ACD) network. It is a Made-in-India technology that is designed to help Indian Railways achieve the goal of "zero accidents". Kavach is a radio communication-based microprocessor and Global Positioning System technology.
- 'Kavach' implementation will bring train movement to a halt automatically when it notices another train on the same line within a prescribed distance.
- Trains will also stop on their own when the digital system notices any manual error. The technology has also received a Safety integrity level 4 certification.
- **Hence, statement 1 is not correct and statement 2 is correct.**

Q 54.D

- **The International Monetary Fund** assists countries hit by crises by providing them financial support to create breathing room as they implement adjustment policies to restore economic stability and growth. It also provides precautionary financing to help prevent and insure against crises.
- **Various instruments/tools of IMF are:**
- **The Poverty Reduction and Growth Facility (PRGF)** is an arm of the International Monetary Fund which lends to the world's poorest countries.
- The PRGT has these three concessional lending facilities:
  - **Extended Credit Facility (ECF):** Sustained medium- to long-term engagement in case of protracted balance of payments problems
  - **Standby Credit Facility (SCF):** Financing for LICs with actual or potential short-term balance of payments and adjustment needs caused by domestic or external shocks, or policy slippages—can also be used on a precautionary basis during times of increased risk and uncertainty

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- **Rapid Credit Facility (RCF):** Rapid financial support as a single up-front payout for low-income countries facing urgent balance of payments needs—possible repeated disbursements over a (limited) period in case of recurring or ongoing balance of payments needs.

- **The Catastrophe Containment and Relief Trust is a bailout fund of the International Monetary Fund.** The Catastrophe Containment and Relief Trust (CCRT) allows the IMF to provide grants for debt relief for the poorest and most vulnerable countries hit by catastrophic natural disasters or public health disasters. Established in February 2015 during the Ebola outbreak and modified in March 2020 in response to the COVID-19 pandemic, **CCRT grants complement donor financing and IMF concessional lending through the Poverty Reduction and Growth Trust (PRGT).**
- **Hence option (d) is the correct answer.**

Q 55.D

The most important feature of the Sangam economy was flourishing trade with the Roman world. It is confirmed by the recovery of a large number of Roman gold coins in south India. The discovery of monsoons and the use of direct sea route between Indian coasts and the western world was the main reason for the growth of this trade. It led to rise of important towns and craft centres in the Tamil region. Ports have served the cause of overseas trade since Sangam age in South India. The port with harbour facilities and roads leading to important towns were gradually widened in South India through the centuries.

- Vanji, identified with the present day Karur in Tamil Nadu, was the capital of the Cheras and also an important centre of trade and craft. Muzris, i.e., Cranganore on the south-west coast, was the foremost port of the Cheras.
- **Madurai,** the capital of the Pandyas, is described in the Sangam poems as a large city enclosed by a wall. It was an important centre of fine textile and ivory working.
- **Korkai,** in Tirunelveli district of Tamil Nadu, was an important Pandya port. It was famous for its pearls.
- **Uraiyur** (Tiruchirapalli in Tamil Nadu), the capital of the Cholas, was a grand city with magnificent buildings. Kaveripattinam or Puhar was the main Chola port. It was the great centre of trade and commerce (mainly centre of cotton cloth) and excavations show that it had a large dock.
- **Hence option (d) is the correct answer.**

Q 56.B

- Recently, a report on the state of climate risk regulation in Africa's financial industry was launched at the 26th Conference of the Parties (CoP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow.
- It was published by three global institutions: African Development Bank (AfDB), the Global Center on Adaptation (GCA), and the UN Environment Program Finance Initiative (UNEP-FI), which is a partnership between UNEP and the global financial sector and mobilises private sector finance for sustainable development.
- **The African Financial Alliance on Climate Change (AFAC) was launched by the African Development Bank in 2018. Hence statement 1 is not correct.**
- It aims to put the financial sector at the centre of Africa's climate agenda by bringing together Africa's key financial institutions, including central banks, insurance companies, sovereign wealth and pension funds, stock exchanges, as well as commercial and development banks, to mobilise private capital flows towards continent wide low-carbon and climate resilient development.
- **AFAC is unique as this is the first time that key actors in financial value chain are taking a leading role in driving climate action for the continent.**
- AFAC will complement and leverage other global and regional climate change initiatives being launched by the **Group of Twenty (G20) countries** and other stakeholders for their respective countries/regions. **Hence statement 2 is correct.**

Q 57.B

- **Hakki Pikki** are a nomadic tribe which migrated from **Northern India and now mainly settled in Karnataka region and other South Indian states. Hence option (b) is the correct answer.**
- They are known as Bird Catcher (**Hakki means Bird and Pikki means catcher in Kannada language**).
- They speak Indo Aryan language named as 'Vaagri' by scholars.
- UNESCO has listed Hakki Pikki is one of the endangered languages.
- Today, they are mainly engaged in selling of herbal products like herbal oils.

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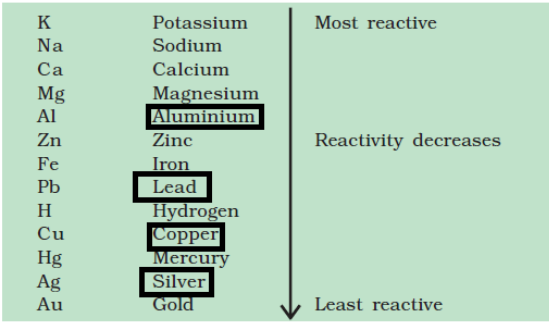
Q 58.C

- **"New India Literacy Programme" was launched for the period FYs 2022-2027 to cover all the aspects of Adult Education to align with National Education Policy 2020 and Budget Announcements 2021-22.** The National Education Policy 2020 has recommendations for Adult Education and Lifelong Learning.
- **The objectives of the scheme is to impart not only foundational literacy and numeracy but also to cover other components which are necessary for a citizen of 21st century such as critical life skills - financial literacy, digital literacy, commercial skills, health care and awareness, child care and education, and family welfare); vocational skills development, etc. Hence, statement 1 is not correct.**
- **The scheme will be implemented through volunteerism through online mode.** The training, orientation, workshops of volunteers, may be organized through face-to-face mode. **Hence, statement 2 is correct.**
- **The scheme will cover non-literates of the age of 15 years and above in all state/UTs in the country.** The target for Foundational Literacy and Numeracy for FYs 2022-27 is 5 (five) crore learners. **Hence, statement 3 is not correct.**

Q 59.B

- In chemistry, reactivity is a measure of how readily a substance undergoes a chemical reaction. The reaction can involve the substance on its own or with other atoms or compounds, generally accompanied by a release of energy.
- In general, the more reactive a metal is: the more vigorously it reacts with other substances the more easily it loses electrons to form positive ions (cations) We can examine the reactivity of metals by observing their reactions with oxygen, water, steam and whether it displaces other metals in displacement reactions.
- **Relative reactivities of metals**



- **Hence, option (b) is the correct answer.**

Q 60.B

- **India imports almost no petrol or diesel. It imports crude.** But the price we pay for fuel is based largely on **Import Parity Price (IPP)** or the price we would pay if India were to be actually importing petrol or diesel. India's export of petrol and diesel is more than imports.
- Oil refiners, who make these products in India, are paid what is called a **Refinery Gate Price (RGP) based on the Trade Parity Price (TPP)** which is a weighted average of the **Import Parity Price and the Export Parity Price (EPP).** IPP is the price importers would pay if they actually imported the product. So, it includes not just the cost of the fuel itself, but also freight charges, insurance, customs duty and port charges. **Hence option (b) is the correct answer.**
- This method of calculating the price to be paid to refiners means that **whenever international oil prices rise, they get a windfall.** That is because **Customs is an 'ad valorem' rate or a percentage of the basic value** unlike a specific duty which would remain fixed irrespective of basic price. Since Customs duty is 2.5 percent of the imported price, it goes up in absolute terms as the basic price does.

Q 61.B

- **Blue stragglers are a class of stars observed in old, dense stellar systems such as globular clusters. They stand out because old stellar populations are expected to be devoid of blue (high-mass) stars that possess very short lifespans.**
  - Blue Stragglers stand out as they are bigger and bluer than the rest of the stars.
  - **Since Sun is the only star in our solar system, there are no Blue Stragglers in our solar system. Hence, statement 1 is not correct and 2 is correct.**

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- Carrying out the first-ever comprehensive analysis of blue stragglers, Indian researchers found that half of the blue stragglers in their sample are formed through mass transfer from a close binary companion star, one third are likely formed through collisions of 2 stars, and the remaining are formed through interactions of more than 2 stars.
- A bunch of stars born at the same time from the same cloud form a star cluster. As time passes, each star evolves differently depending on its mass. The most massive and bright stars evolve and move off the main sequence creating a bend in their track, known as the turnoff.
- Stars above this bend or brighter and hotter stars are not expected in a cluster, as they leave the main sequence to become red giants. But in 1953, Allan Sandage found that some stars seem to be hotter than the turnoff of the parent cluster. Initially, these blue stars still straggling above the turnoff were not part of these clusters. However, later studies confirmed that these stars are indeed cluster members, and they were termed "Blue Stragglers".
- **The formation of blue stragglers was confirmed through observations of the nearby globular cluster, 47 Tucanae, taken with the Hubble Space Telescope. These observations showed that one of the blue stragglers (BSS 19) has a mass almost twice that of the normal stars in the cluster and an extraordinarily high rotation rate at 75 times faster than that of the Sun. Both the high mass and the rapid rotation of this star bear witness to its origin in a stellar merger event.**

Q 62.B

- In India, the minerals are classified as minor minerals and major minerals. According to section 3(e) of the Mines and Minerals (Development and Regulation) Act, 1957 "Minor Minerals" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette, declare to be a minor mineral.
- **The major-minor classification has nothing to do with the quantum /availability of these minerals**, though it is correlated with the relative value of these minerals. Further, this classification is based more on their end-use, rather than the level of production, level of mechanization, export and import etc. **Hence, statement 1 is not correct.**
- Major minerals are those specified in the first schedule appended in the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act 1957) and the common major minerals are Lignite, Coal, Uranium, iron ore, gold etc. It may be noted that there is no official definition for "major minerals" in the MMDR Act. Hence, whatever is not declared as a "minor mineral" may be treated as the major mineral.
- **The central government has the power to notify "minor minerals" under section 3 (e) of the MMDR Act, 1957.** On the other hand, as per Section 15 of the MMDR Act, 1957 State Governments have complete powers for making Rules for grant of concessions in respect of extraction of minor minerals and levy and collection of royalty on minor minerals. **Hence, statement 2 is correct.**
- **The power to frame policy and legislation relating to minor minerals is entirely delegated to the State Governments** while policy and legislation relating to the major minerals are dealt by the Ministry of Mines under Union /Central Government. **Hence, statement 3 is correct.**

Q 63.C

- The Puranas are religious texts composed in Sanskrit, **orally narrated for centuries** before being written down from the 2nd century CE onwards.
- There are 18 mahapuranas (major puranas), and 18 upapuranas (minor puranas).
- They commonly contain **stories of the origin of the specific purana, myths and legends of the key divinities, methods of worship, the stories of the pilgrimage places, and a listing of the genealogies of gods, sages and kings.**
- The Puranas talk about the concept of time. **There are four ages or yugas—krita, treta, dvapara, and kali**, all consisting of thousands and thousands of years.
- These four yugas make up a mahayuga, and 1,000 mahayugas constitute a kalpa. Every kalpa is divided into 14 manvantaras, each presided over by a Manu. One yuga follows the other, and the periodic destruction of the world is followed by its re-creation. This cycle of time is connected with the cyclical decline and revival of dharma.
- **Hence, option (c) is the correct answer.**

Q 64.D

- The **Deccan Riots in Maharashtra was a peasant revolt**, though it was different in character. I**t was not a movement of the poor tribals or landless peasants and was sparked off by particular grievances**

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and with specific and limited objectives. It was led by the relatively better-off sections of the peasantry who were called **Kunvi peasants in Maharashtra**.

- In Maharashtra, the rich peasant development was brought about by the cotton boom of the 1860s. But, this development was short-lived. The prices of cotton fell sharply in the 1870s. The **cotton boom created by the artificial demand generated by the American Civil War** had just crashed after the end of the war. To make matters worse for the peasants, a sharp upward hike in inland revenue coincided with this depression in the international cotton market. In attempting to cope with the increasing revenue demand the peasants fell into the clutches of the moneylender. **Hence statement 1 is correct.**
- **The Mahajan in this region were mostly Marwaris. They were called sowkar.** The sowkars had migrated from Gujarat and Rajasthan. They settled down in the villages adjoining Ahmednagar and Poona. The capital possessed by them became indispensable in course of time. But, the Marwaris retained their ties with their native province and failed to integrate themselves culturally to Maharashtra. They retained a different identity in the society they lived in. However, this lack of integration did not initially create any problem. They peacefully coexisted with the local inhabitants.
- **The problem started with the advent of colonial rule. The Ryotwari system brought about a new land-revenue arrangement.** The new system was sustained by a new Rule of Law. Taking advantage of the new legal mechanism and the law courts the greedy moneylenders started exploiting the peasants. Taking advantage of the new judicial system the sowkars started swindling the helpless Kunvi peasants. The result was the widespread indebtedness of the peasants.
- **The riots were directed entirely at the village sowkars (moneylenders), to whom most of the peasant agriculturists of the area were indebted.** The rebels looted and destroyed the houses of the Marwari Mahajan. In many places, mob violence was directed against the shops and offices of the sowkars**. The ryots organised a social boycott movement against the moneylenders.** They refused to buy from the moneylenders' shops and cultivate their fields. The social boycott was soon transformed into agrarian riots when it did not prove very effective. There was very little violence in this settling of accounts. Once the moneylenders' instruments of oppression — debt bonds were surrendered, no need for further violence was felt. Such actions reflected the solidarity of the rebels. If the British had not acted promptly in suppressing the revolt, the rioting spirit was highly likely to have spread to the whole of Maharashtra. **Hence statement 3 is correct.**
- **The modern nationalist intelligentsia of Maharashtra supported the peasants' cause. Already, in 1873- 74, the Poona Sarvajanik Sabha, led by Justice Ranade, had organized a successful campaign among the peasants, as well as at Poona and Bombay against the land revenue settlement of 1867.** Under its impact, a large number of peasants had refused to pay the enhanced revenue. This agitation had generated a mentality of resistance among the peasants which contributed to the rise of peasant protest in 1875. **Hence statement 2 is correct.**
- **The colonial government-appointed The Deccan Riot Commission to enquire into the causes of the uprising.** The report shows that riots did not occur in areas where the moneylenders were of local origin.
- **Four years after the disturbances, the Deccan Agriculturists' Relief Act (1879) was passed. The Act provided some limited protection to better-off peasants by strengthening the judicial procedures.**

Q 65.D

- The **Consolidated Sinking Fund was first proposed by Tenth Finance Commission and was formed in the year 1999-2000,** for the amortization of open market credits benefited by the State Government. This is one of the intermediaries accessible to State governments for revamping their liabilities. It is a reserve through which some financial strictness is being protected.
- The **main objective for creating CSF was to ensure the repayment of the public debt, cushion for amortization of all liabilities, ensure good fiscal governance,** consolidate their finances, facilitate the restructuring of finances in these states, especially the states having chronic revenue deficits, special focus has been given to greater transparency in fiscal operations and debt sustainability. **Hence statement 1 is correct.**
- The **fund has to be financed outside the consolidated fund of the states** and public accounts should only be used for the redemption of loans. **Hence statement 2 is not correct**
- The State Government is required to make a yearly subsidy to the Fund at 0.5 percent of the exceptional debts toward the finish of the past monetary year. As far as rules of the RBI, exceptional debts are characterized as containing Internal Debt and Public Account liabilities of the State Government.
- **Salient features and Benefits of Consolidated Sinking Fund**
    - Lower default risk: Since there will be reserves put aside to take care of the securities at development, there's less probability of default on target owed at development. As such, the sum owed at development is significantly less if CSF is built up.

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- **Lower interest rates on the bonds, that is, creditworthiness: Since CSF includes a component of security and brings down default hazard, the financing costs on the bonds are typically lower. Hence statement 3 is correct**
- Help state governments to meet their fiscal deficit: State Governments that are strong fiscally can take initiative to get rated under government performance from approved rating agencies which may help them to get better rates in auctions of their bonds.
- Improve financial impact: Maintaining CSF gives States and investors comfort that State Development Loans payments will be made under all circumstances

Q 66.B

- The percentage of moisture present in the atmosphere as compared to its full capacity at a given temperature is known as the relative humidity.
- The air containing moisture to its full capacity at a given temperature is said to be saturated. It means that the air at the given temperature is incapable of holding any additional amount of moisture at that stage. The temperature at which saturation occurs in a given sample of air is known as dew point.
- When the dew point equals the air temperature, the air is saturated and the relative humidity is %100. The dew point temperature tells us nothing about how many water molecules are in the atmosphere or how close the air is to a relative humidity of 100%. To know how close the air is to saturation, we need to know the dew point and the air temperature. The closer the dew point is to the air temperature, the closer the air is to saturation. The temperature, the dew point temperature, and the relative humidity are related to one another.
- Thus at dew point air will be at its maximum capacity to hold moisture and hence Relative Humidity will be 100%. **Hence option (a) is not correct and (b) is the correct answer.**
- **Option (c) is not correct:** as they do affect each other as can be seen above.
- **Option (d) is not correct:** as Dew point being as absolute measure is often cited as better way of measuring the humidity.

Q 67.B

- The Jet Stream is a geostrophic wind blowing horizontally through the upper layers of the troposphere, generally from west to east, at an altitude of 20,000 - 50,000 feet. Tibetan highlands act as a barrier in the path of these jet streams. **So, jet streams get bifurcated. One of its branches blows to the north of the Tibetan highlands,** while the southern branch blows in an eastward direction, south of the Himalayas. **Hence option (b) is the correct answer.**

Q 68.B

- **The Code on Wages, 2019** removes the multiplicity of wage definitions, which can significantly reduce litigation as well as compliance cost for employers. The Code replaces the following four laws: the Payment of Wages Act, 1936, the Minimum Wages Act, 1948, the Payment of Bonus Act, 1965, and the Equal Remuneration Act, 1976.
- **Salient features of the Code on Wages, 2019:**
- **"Scheduled employment"** means an employment specified in the **Schedule appended to the Minimum Wages Act.** All other employments come under **Non-Scheduled employment.** Under the provisions of the **Minimum Wages Act, 1948, both Central and State Governments are appropriate Governments** to fix, review and revise the minimum wages of the workers employed in the scheduled employments under their respective jurisdictions. Presently, there are 45 scheduled employments in the Central Sphere while in the State Sphere the number of such employments is 1709.
- The wage code is meant to ensure the "Right to Sustenance" for every worker and extend the legislative **protection of minimum wage to 100% of the country's workforce.** It means the **Wage Code universalizes minimum wages to all** employees in all sectors as **against employees of scheduled employment, at present. Hence statement 2 is correct.**
- To remove the regional disparity in minimum wages, the provision of floor wage has been introduced. A **National Floor Level Minimum Wage will be set by the Central government** and will be revised every five years, while states will fix minimum wages for their regions, which cannot be lower than the floor wage. **Hence statement 1 is not correct.**
- While fixing minimum wages, the central or state governments may take into account factors such as skill of workers, and difficulty of work.
- The new Act links minimum wage across the country to the skills of the employee and the place of employment.

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- **Overtime:** The central or state government may fix the number of hours that constitute a normal working day. In case employees work in excess of a normal working day, they will be entitled to overtime wage, which **must be at least twice the normal rate of wages. Hence statement 3 is correct.**
- Review of minimum wages in every five years is provided in the Code.
- **Hence option (b) is the correct answer.**

Q 69.C

- **Recent Context: The body of Nobel Peace Prize winning Anglican archbishop and anti-apartheid campaigner Desmond Tutu underwent aquamation, a green alternative to traditional cremation methods.**
- **What is aquamation?** Aquamation, or alkaline hydrolysis, is **a process in which the body of the deceased is immersed for a few hours in a mixture of water and a strong alkali in a pressurized metal cylinder and heated to around 150 degrees centigrade. Hence option (c) is the correct answer.**
- The combination of gentle water flow, temperature, and alkalinity accentuate the breakdown of the organic materials.
- The Cremation Association of North America (CANA), an international non-profit organization, defines alkaline hydrolysis as "flameless cremation". Considered to be an environmentally friendly way to dispose of a body, the process is also known as water cremation, green cremation, or chemical cremation.
- The process leaves behind bone fragments and a neutral liquid called effluent. The CANA website states, "The decomposition that occurs in alkaline hydrolysis is the same as that which occurs during burial, just sped up dramatically by the chemicals. The effluent is sterile and contains salts, sugars, amino acids, and peptides. There is no tissue and no DNA left after the process completes. This effluent is discharged with all other wastewater, and is a welcome addition to the water systems."
- **How long has alkaline hydrolysis been in use?**
  - The process was developed and patented in 1888 by Amos Herbert Hanson, a farmer who was trying to develop an ingenious way to make fertilizer from animal carcasses.
  - The first commercial system was installed at Albany Medical College in 1993. Thereafter, the process continued to be in use by hospitals and universities with donated body programs.
  - It was only in 2011 that the process was used in the funeral industry, at two funeral homes in Ohio and Florida.

Q 70.D

- The **Reserve Bank - Integrated Ombudsman Scheme, 2021 (the Scheme) was launched in November 2021.**
- The Scheme integrates the existing three Ombudsman schemes of RBI namely, (i) **the Banking Ombudsman Scheme, 2006**; (ii) **the Ombudsman Scheme for Non-Banking Financial Companies, 2018; and (iii) the Ombudsman Scheme for Digital Transactions, 2019.**
- In addition to integrating the three existing schemes, the Scheme also includes under its ambit **Non-Scheduled Primary Co-operative Banks with deposit size of ₹50 crores and above.** The Scheme adopts the 'One Nation One Ombudsman' approach by making the RBI Ombudsman mechanism jurisdiction neutral.
- Under the recent amendments to the **Banking Ombudsman Scheme, 2006,** all commercial banks**, regional rural banks**, and scheduled primary co-operative banks are under the ambit of the Banking Ombudsman and have to comply with the norms of the Integrated Ombudsman Scheme.
- The Scheme, framed by the Reserve Bank in the exercise of the powers conferred on it under Section 35A of the Banking Regulation Act, 1949 will provide cost-free redress of customer complaints involving deficiency in services rendered by entities regulated by RBI, if not resolved to the satisfaction of the customers or not replied within a period of 30 days by the regulated entity.
- **Hence option (d) is the correct answer.**

Q 71.C

- **The essential religious practice doctrine means that any religious practices that are so 'essential' to religion or form the basis of religion, will fall within the protection of Article 25 and 26 and should be protected as such.**
- A seven-judge Bench of the Supreme Court invented the doctrine of "essentiality" in the Shirur Mutt case in 1954. The court held that the term "religion" will cover all rituals and practices "integral" to a religion, and took upon itself the responsibility of determining the essential and non-essential practices of a religion. Any other activities related to it with the exceptions to those already mentioned in the Constitution will be covered in the exceptions to the right to religion.

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- Supreme Court has observed that fundamental rights do not offer iron cast protection for "essential and integral" religious practices. Such traditions can be struck down as unconstitutional if they discriminate on grounds of caste, sex, public morality, health etc. Supreme Court, in the past, has invalidated various religious practices such as Tandav Dance, ban on women entry at Sabarimala Temple, Triple Talaq, animal sacrifice etc.
- **Supreme court came up with contentious Doctrine of Essentiality in 'Shirur math' Case in 1954 to protect only such religious practices which are considered essential and integral to religion.**
- **Hence, option (c) is the correct answer.**

Q 72.B

- **The Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat** is an international treaty for the conservation and sustainable use of wetlands
- It is also known as the Convention on Wetlands. It is named after the city of Ramsar in Iran, where the convention was signed in 1971.
- Two new Ramsar sites (Wetlands of International Importance) were announced by Minister for Environment, Forest and Climate Change on World Wetlands Day 2022. **Thus increasing the total number of Ramsar sites to 49.** The two new Ramsar sites are Khijadia Wildlife Sanctuary in Gujarat and Bakhira Wildlife Sanctuary in Uttar Pradesh**. Hence statement 1 is not correct.**
- **India has the largest number of Ramsar sites in South Asia. Hence statement 2 is correct.**
- **Uttar Pradesh has the largest number of Ramsar Sites in India** with the total number of sites as 10. **Hence statement 3 is not correct**.
    - It includes Nawabganj Bird Sanctuary, Parvati Agra Bird Sanctuary, Saman Bird Sanctuary, Samaspur Bird Sanctuary, Sandi Bird Sanctuary, Sarsai Nawar Jheel, Sur Sarovar and Upper Ganga River (Brijghat to Narora Stretch).
- Kerala has only 3 Ramsar Sites; Asthamudi Wetland, Sasthamkotta Lake and Vembanad Kol Wetland.
- **Sunderbans Wetland in West Bengal is the largest Ramsar Site in India** covering an area of 4230 Square Kilometers while Vembanad Kol is the second largest. **Hence statement 4 is not correct.**

Q 73.D

- **The Indian Institute of Technology, Kanpur,** has developed a portable testing device named '**Bhu Parikshak**' that **can detect soil health in just 90 seconds through a mobile application using merely five grams of soil as a sample. Hence statement 2 is not correct**
- This first-of-its-kind invention **is based on near Infrared spectroscopy technology that provides real-time soil analysis reports on smartphones with an embedded mobile application.**
- The rapid soil testing device will assist individual farmers in obtaining soil health parameters of agricultural fields with recommended doses of fertilizers. The device **can detect six important soil parameters, including nitrogen, phosphorus, potassium, and organic carbon. Hence statement 1 is not correct.**
- The device can test up to one lakh soil test samples, which is the highest testing capability of a device among its predecessors. The mobile application is made user-friendly through the user interface, which is available in local languages so that even a Class 8 passout can easily handle the device and the mobile application. **The technology has been transferred to an agri-tech company, AgroNxt Services Private Limited.**

Q 74.D

- **Mimamsa philosophy is basically the analysis of interpretation, application and the use of the text of the Samhita and Brahmana portions of the Veda.**
    - According to Mimamsa philosophy, **Vedas are eternal and possess all knowledge, and religion means the fulfilment of duties prescribed by the Vedas.**
    - This philosophy encompasses the Nyaya-Vaisheshika systems and emphasizes the concept of valid knowledge. **Its main text is known as the Sutras of Jaimini (or Upadesa Sutras) which have been written during the third century BC.**
    - The names associated with this philosophy are **Sabar Swami and Kumarila Bhatta.**
    - The essence of the system according to Jaimini is Dharma which is the dispenser of fruits of one's actions, the law of righteousness itself. This system lays stress on the ritualistic part of Vedas.
- **Hence option (d) is the correct answer**

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Q 75.A

- **Recently, a study by the Global Coral Reef Monitoring Network shows that corals are under siege from global warming.**
  - Fourteen percent of the world's corals were lost between 2009 and 2018.
  - Coral reefs are exceptionally biodiverse. They are referred to as "the rainforests of the sea" for their biodiversity, coral reefs are the primary habitat for more than 4,000 species of fish, 700 species of coral and thousands of other plants and animals.
  - They are under significant direct pressure from human activities, and are uniquely vulnerable to climate change as well as ocean acidification.
    - ✓ The increasing acidification of the ocean inhibits coral's ability to produce the calcium carbonate exoskeletons they rely on for shelter.
    - ✓ As the temperatures of the world's oceans increase due to global warming, coral polyps expel the zooxanthellae they depend on for food. Once the zooxanthellae are gone, the coral loses its brilliant color. Coral colonies subject to bleaching usually die off.
  - This makes **coral reefs a sensitive indicator system for coastal ocean health, climate change and ocean acidification impacts**, and their implications for society. **Hence statement 1 is correct.**
  - **Coral reefs cover just under 1% of the ocean floor but support more than 25% of marine life. Hence statement 2 is correct.**
  - **The Global Coral Reef Monitoring Network (GCRMN) was established by the International Coral Reef Initiative (ICRI)** in 1995, initially with the primary task of reporting on the condition of the world's coral reefs in the context of the development of the ICRI 'Call to Action'. **Hence statement 3 is not correct.**

Q 76.B

- **IMPORTANT COMMITTEES OF THE CONSTITUENT ASSEMBLY AND THEIR CHAIRMEN**

Name of the Committee	Chairman
Committee on the Rules of Procedure	Rajendra Prasad
Steering Committee	Rajendra Prasad
Finance and Staff Committee	Rajendra Prasad
Credential Committee	Alladi Krishnaswami Ayyar
House Committee	B. Pattabhi Sitaramayya
Order of Business Committee	K.M. Munsi
Ad hoc Committee on the National Flag	Rajendra Prasad
Committee on the Functions of the Constituent Assembly	G.V. Mavalankar
States Committee	Jawaharlal Nehru
Advisory Committee on Fundamental Rights, Minorities and Tribal and Excluded Areas	Vallabhbhai Patel
Minorities Sub-Committee	H.C. Mookherjee
Fundamental Rights Sub-Committee	J.B. Kripalani
North-East Frontier Tribal Areas and Assam Exluded & Partially Excluded Areas Sub-Committee	Gopinath Bardoloi
Excluded and Partially Excluded Areas (Other than those in Assam) Sub-Committee	A.V. Thakkar
Union Powers Committee	Jawaharlal Nehru
Union Constitution Committee	Jawaharlal Nehru
Drafting Committee	B.R. Ambedkar

- **Hence, only pair 2 is correctly matched.**

Q 77.B

- The Money Multiplier refers to how an initial deposit can lead to a bigger final increase in the total money supply.
  - **Money Multiplier = (Change in total money supply)/ (Change in monetary base)**
- The money multiplier is a key element of the fractional banking system. There is an initial increase in bank deposits (monetary base). The bank holds a fraction of this deposit in reserves and then lends out the

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rest. This bank loan will, in turn, be re-deposited in banks allowing a further increase in bank lending and a further increase in the money supply.

- The **Reserve ratio** is the percentage of deposits that banks keep in liquid reserves.
  - **Money Multiplier = 1/(Reserve ratio)**
- In theory, we can predict the size of the money multiplier by knowing the reserve ratio. If you had a reserve ratio of 5%. You would expect a money multiplier of 1/0.05 = 20. Hence **if Reserve ratio is decreased, Money multiplier would increase. Hence statement 1 is not correct.**
- **Velocity of money** is a measurement of the rate at which money is exchanged in an economy. **High money velocity is usually associated with a healthy, expanding economy.** Low money velocity is usually associated with recessions and contractions.
  - **Velocity of money = GDP / money supply.**
- If **GDP remains constant, increase in money supply would result in decrease in the velocity of money** and vice versa. **Hence statement 2 is correct.**
- **Hence option (b) is the correct answer.**

Q 78.B

- Environmental, social, and governance (ESG) criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. **ESG Funds are Thematic Mutual Funds that invest in socially responsible companies and wherein the investment process has included evaluation of factors like their environmental (E), social (S), and governance (G) practices.** ESG Funds invest in organizations that are ESG compliant and aim at sustainable growth. The companies have business models that can navigate the sustainability requirements and, importantly, can help investors generate wealth in the long term. **Hence statement 1 is correct.**
- From **financial year 2022-2023, the top 1,000 listed companies in India (by market capitalisation) will need to prepare a 'business responsibility and sustainability report' (or "BRSR"), containing detailed ESG disclosures.** The BRSR has to be a part of the annual report, which gets notified to the stock exchanges, published on official company websites, and separately provided to shareholders. **Hence statement 2 is correct.**
- **ESG Funds are regulated by Securities and Exchange Board of India (SEBI). Hence statement 3 is not correct.**

Q 79.D

- Economic recovery is the business cycle stage following a recession that is characterized by a sustained period of improving business activity. Normally, during an economic recovery, gross domestic product (GDP) grows, incomes rise, and unemployment falls as the economy rebounds. During an economic recovery, the economy undergoes a process of adaptation and adjustment to new conditions, including the factors that triggered the recession in the first place and the new policies and rules implemented by governments and central banks in response to the recession.
- **A K-shaped recovery occurs when, following a recession, different parts of the economy recover at different rates, times, or magnitudes.** This is in contrast to an even, uniform recovery across sectors, industries, or groups of people. A K-shaped recovery leads to changes in the structure of the economy or the broader society as economic outcomes and relations are fundamentally changed before and after the recession. This type of recovery is called K-shaped because the path of different parts of the economy when charted together may diverge, resembling the two arms of the Roman letter "K." **Hence option (d) is the correct answer.**
- **A W-shaped recovery** is when an economy passes through a recession into recovery and then immediately turns down into another recession. W-shaped recessions can be particularly painful because the brief recovery that occurs can trick investors into getting back in too early.
- **L-shaped recoveries** are characterized by persistently high unemployment, a slow return of businesses investment activity, and a sluggish rate of growth in economic output, and are associated with some of the worst economic episodes through history. The most important feature that defines an L-shaped recovery is a failure of the economy to progress back toward full employment after a recession.
- **A V-shaped recovery** is characterized by a quick and sustained recovery in measures of economic performance after a sharp economic decline. Because of the speed of economic adjustment and recovery in macroeconomic performance, a V-shaped recovery is a best-case scenario given the recession.

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Q 80.A

- Several events abroad tended to encourage the **growth of militant nationalism in India.**
  - **Option 1 is correct:** The rise of modern Japan after 1868 showed that a backward Asian country would develop itself without Western control. Within few years, Japan defeated a major nation, Russia in the Russo-Japanese war of 1905.
  - **Option 2 is correct:** In 1896, Italian army was defeated by the Ethiopians in the Battle of Adwa. The decisive victory thwarted the campaign of the Kingdom of Italy to expand its colonial empire in the Horn of Africa. By the end of the 19th century, European powers had carved up almost all of Africa; only Ethiopia and Liberia still maintained their independence.
  - **Both the above events exploded the myth of European superiority and infallibility.**
  - Also, revolutionary movements in Ireland, Russia, Turkey and Boer war in South Africa etc., convinced that a united people willing to make sacrifices could bring down even the most powerful despotic governments.
  - **Option 3 is not correct:** Opium wars, were fought between China and Britain about the trade of opium, with British winning in both the wars.

Q 81.B

- "Complaint" is any allegation made orally or in writing to a Magistrate, whereas, an FIR is the document that has been prepared by the police after verifying the facts of the complaint.
- The CrPC has defined the term "complaint" as any allegation made orally or in writing to a Magistrate, with a view to his taking action under this Code, that some person has committed an offence, but does not include a police report.
- **The term first information report (FIR) is not defined in the Indian Penal Code (IPC), Code of Criminal Procedure (CrPC), or in any other law. But in police regulations or rules, FIR is the information recorded under Section 154 ("Information in cognizable cases") of CrPC. Hence, statement 1 is not correct.**
- As per the Section 154, there are three important elements of an FIR:
  - The information must relate to the commission of a cognizable offence,
  - It should be given in writing or orally to the head of the police station and,
  - It must be written down and signed by the informant, and its key points should be recorded in a daily diary. A copy of the information as recorded shall be given forthwith, free of cost to the informant
- **Cognizable offence is one in which a police officer may, in accordance with the First Schedule of the CrPC, or under any other law for the time being in force, make an arrest without a warrant, whereas, word 'non-cognizable' stands for 'a police officer shall not arrest without warrant'. Hence, statement 2 is correct.**

Q 82.D

- Infrastructure Debt Funds (IDFs) are investment vehicles that can be sponsored by commercial banks and NBFCs in India in which domestic/offshore institutional investors, **especially insurance and pension funds can invest through units and bonds issued by the IDF's.**
- **IDFs would essentially act as vehicles for refinancing existing debt of infrastructure companies, thereby creating fresh headroom for banks to lend to fresh infrastructure projects. Hence statement 1 is correct.**
- Infrastructure Debt Funds (IDFs), can be set up either as a Trust or as a Company.
- **A trust-based IDF would normally be a Mutual Fund (MF), regulated by SEBI, while a company based IDF would normally be an Non-Banking Financial Company (NBFC) regulated by the Reserve Bank. Hence statement 2 is not correct.**
- **These Funds can be established by Banks, Financial Institutions and Non- banking Financial Companies (NBFCs). Hence statement 3 is correct.**
- Only banks and Infrastructure Finance companies can sponsor IDF-NBFCs. **"Sponsorship" means equity participation by the NBFC between 30 to 49% of the IDF.**

Q 83.D

- After the death of Muhammad-bin-Tughlaq in 1351, Firoz Tughlaq had the unique distinction of being chosen as sultan by the nobles. He appointed Khan-i-Jahan Maqbal, a Telugu Brahmin convert as Wazir (prime minister). The wazir helped the Sultan in his administration and maintained the prestige of the Sultanate during this period.
- After his accession, Firoz had to face the problem of preventing the disintegration of the Delhi Sultanate. He tried to safeguard his authority over north India instead of reasserting his authority over the Deccan

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and south India. He led two expeditions to Bengal but they were not successful. **Bengal became free from the control of the Delhi Sultanate. Hence, statement 1 is not correct.**

- The reign of Firoz Tughlaq was more notable for his administration. **He strictly followed the advice of the ulemas (theologians) in running the administration. As he was guided by the ulemas, he was intolerant towards Shia Muslims and Sufis.** He treated Hindus as second-grade citizens and imposed Jiziya. In this respect, he was the precursor of Sikandar Lodi and Aurangazeb. **Hence, statement 2 is not correct.**
- **He increased the number of slaves by capturing the defeated soldiers and young persons.** In his regime, the number of slaves increased to one lakh eighty thousand. When Firoz died in 1388 the struggle for power between the Sultan and the nobles started once again. His successors had to face the rebellion of the slaves created by Firoz Tughlaq. **Hence, statement 3 is not correct.**

Q 84.D

- **Tappa** is one of the major genres of musical tradition in India. 'Tappa' is believed to be originated from musical talent of Ghulam Nabi Shori, i.e. Shori Miyan after getting influenced by **folk music of Punjab and Sindh.** It is supposed that Tappa is originally, the **folk song of camel-drivers of Punjab-Sindh region**, so it contains the lyrics in Punjabi language.
- Basically the lyrical content depicts the love and sorrow of separation of Hir and Ranjha or any lovers. Tappa, in Punjabi and Pashto language, is set in ragas generally used for the **semi classical forms.** It is characterized by jumpy and flashy tonal movements with **rhythmic and rapid notes.**
- **Hence option (d) is the correct answer.**

Q 85.A

- **Government think tank NITI Aayog recently announced the launch of 'e-Sawaari India Electric Bus Coalition' in partnership with Convergence Energy Service Ltd (CESL) and World Resources Institute, India (WRI India), with support from Transformative Urban Mobility Initiative (TUMI).**
- The coalition has been launched with the aim to share knowledge and learnings on e-bus adoption in India among various stakeholders, including central and state governments, city-level government agencies, transit service providers, original equipment manufacturers (OEMs), financing institutions and ancillary service providers.
- The e-Saawari India electric bus coalition aims to give a fresh impetus to India's e-bus sector by bringing cities, private sector and financiers work jointly to address the sectoral challenges.
- **Hence, option (a) is the correct answer.**

Q 86.C

- The Ministry of Information and Broadcasting is entrusted with the task of disseminating information about government policies, schemes and programmes through the different medium of mass communication covering radio, television, press, social media, printed publicity like booklets; posters, outdoor publicity including through traditional modes of communication such as dance, drama, folk recitals, puppet shows etc.
- **On February 25, 2021, the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, extended its regulatory powers over internet content, especially on digital news platforms and OTT platforms such as Netflix, Amazon Prime or Hotstar. Hence, statement 1 is not correct.**
- **The content allowed or prohibited in print and electronic media, radio, films or OTT platforms has to follow the free speech rules of the country under Article 19(1) of the Indian constitution, however, there are no specific laws for the same. Hence, statement 2 is correct.**
- The Ministry of Information and Broadcasting is one among the early Ministries set up after India's Independence and **Sardar Vallabhbhai Patel was India's first Minister for Information and Broadcasting. Hence, statement 3 is correct.**

Q 87.D

- Prime Minister's Council on Climate Change (PMCCC) which had been formed by the Union government under the leadership of former Prime Minister Manmohan Singh in mid-2007. It was re-constituted in 2014. It is tasked with evolving a coordinated response to issues relating to climate change at the national level, providing oversight for formulation of action plans in the area of assessment, adaptation and mitigation of climate change, and periodically monitoring key policy decisions.
- Current members of PMCCC
- **Chairperson:** Prime Minister

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- **Members**:
  - Minister for External Affairs
  - **Finance Minister**
  - Minister for Environment, Forests and Climate Change
  - Minister for Water Resources, River Development and Ganga Rejuvenation
  - Minister for Agriculture
  - Minister for Urban Development
  - Minister for Science and Technology
  - Ministers of state (Power; Coal; New and Renewable Energy
  - Cabinet Secretary
  - Foreign Secretary
  - Secretary, Ministry of Environment, Forests and Climate Change
  - Nitin Desai, former under secretary-general for economic and social affairs of the United Nations
  - Chandrasekar Dasgupta, former ambassador to China and the European Union, distinguished fellow of TERI
  - Ajay Mathur, chairperson, Bureau of Energy Efficiency
  - JM Mauskar, adviser, Observer Research Foundation
- **Member convener**: Principal secretary to the Prime Minister
- **Statement 1 is not correct:** PMCCC has remained non functional and has not met in almost 7 years. It has no role to coordinate work for India's commitments at COP 26 in Glasgow. In November 2020, the Modi government announced the formation of the Apex Committee for the Implementation of the Paris Agreement (AIPA). The objective of this committee was to coordinate work for meeting India's nationally determined contribution targets.
- **Statement 2 is not correct:** It is chaired by the Prime Minister of India. But there is no provision wrt to its meeting after every two years. Since it's reconstitution it has been met once only in 2015.
- Minister of finance is its member along with others.

Q 88.D

- Official Languages Act enacted in 1963 provides for the continued use of English (even after 1965), in addition to Hindi, for all official purposes of the Union and also for the transaction of business in Parliament. Notably, this act enables the use of English indefinitely (without any time-limit).
- Further, this act was **amended in 1967 to make the use of English indefinitely (without any time-limit). Further, this act was amended in 1967 to make the use of English, in addition to Hindi, compulsory in certain cases:**
- These include: (a) **resolutions, general orders, rules, notifications, administrative or other reports or press communications issued by the Central government; (b) administrative and other reports and official papers laid before Parliament; and (c) contracts and agreements executed, licences, permits, notices, etc, issued by the Central government or by a corporation or a company owned by the Central government.**
- **Hence, option (d) is correct answer.**

Q 89.B

- **Recently, Hyderabad-based startup Skyroot Aerospace successfully tested Dhawan-1 named after eminent rocket scientist Satish Dhawan. It became the country's first privately developed fully cryogenic rocket engine.** The indigenous engine was **developed using 3D printing with a superalloy.** It runs on two high-performance rocket propellants — **liquid natural gas (LNG) and liquid oxygen (LoX).** This was after successfully designing and developing the solid propulsion rocket engine, the first private firm in the country to do so.
- Cryogenic engines use liquefied gasses at temperatures as low as -150oC as propellants. They are highly efficient and can aid rockets in carrying heavier payloads. India's heaviest launch vehicles – GSLV and GSLV Mk III – use cryogenic fuel in the upper stage of the launch vehicle. Cryogenic engines are one of the hardest to develop and so far only six countries have these launch vehicles including the US, China, Russia, France, Japan, and India. India used its first GSLV in 2001. At least two private space companies – American Blue Origin and European Arianespace – have developed cryogenic engines as well.
- **Hence option (b) is the correct answer**

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Q 90.B

- **In order to prevent delays in releasing prisoners after bail has been granted, the Supreme Court recently approved an electronic system called FASTER (Fast and Secured Transmission of Electronic Records) for transferring e-authenticated copies from courts to prisons.** Under the FASTER system, courts can send e-authenticated copies of bail orders, stay orders, interim orders, and proceedings through secured electronic communication to duty officers at prisons. The court ordered duty officers at prisons to amend rules, procedures, and practices immediately to facilitate the acceptance of e-authenticated order copies. It instructed chief secretaries of states and Union Territories to make arrangements for internet with the adequate speed at all prisons. Until such arrangements are made, the court asked nodal officers to be appointed under the FASTER system to accept e-authenticated copies of orders. **Hence option (b) is the correct answer**

Q 91.A

- **The Biological Diversity Act, 2002:** The act was enacted in 2002, it aims at the conservation of biological resources, managing its sustainable use and enabling fair and equitable sharing benefits arising out of the use and knowledge of biological resources with the local communities.
- The act envisaged a three-tier structure to regulate the access to biological resources:
  - The National Biodiversity Authority (NBA)
  - The State Biodiversity Boards (SBBs)
  - The Biodiversity Management Committees (BMCs) (at local level)
- **Section 6 of the Biological Diversity Act, 2002** states that **no person shall apply for any intellectual property right**, by whatever namecalled, in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the **National Biodiversity Authority** before making such application. **Hence statement 1 is correct.**
  - It also states that if a person applies for a patent, permission of the National Biodiversity Authority may be obtained after the acceptance of the patent but before the sealing of the patent by the patent authority concerned.
  - The National Biodiversity Authority may, while granting the approval under section 6 of the Act, impose benefit sharing fee or royalty or both or impose conditions including the sharing of financial benefits arising out of the commercial utilisation of such rights.
- **Section 7 of the Biological Diversity Act, 2002** states that no person, who is a citizen of India or a body corporate, association or organisation which is registered in India, shall obtain any biological resource for commercial utilisation, or bio-survey and bio-utilisation for commercial utilisation except after giving prior intimation to the State Biodiversity Board.
  - **But this provision is not applicable to the local people and communities of the area, including growers and cultivators of biodiversity, and vaids and hakims, who have been practising indigenous medicine. Hence statement 2 is not correct.**

Q 92.D

- The Muslim kingdom of Bahmani was established by some nobles of the Deccan who revolted against the repressive policies of Sultan Muhammed Tughlaq. **In 1347, Hasan became the king under the title Abdul Muzaffar Ala-Ud-Din Bahman Shah and founded the Bahmani dynasty.** This dynasty lasted for about 175 years and had 18 rulers. At the height of its glory, the Bahmani kingdom extended from north of Krishna river up to the Narmada, and stretched east-west from the coasts of the Bay of Bengal to the Arabian Sea. dynasty. A few years earlier, in 1336, the Vijayanagar kingdom was inaugurated by the Sangama brothers Harihara and Bukka at Vijayanagara (present-day Hampi) on the south bank of Tungabhadra. During the next two centuries, these two states fought continually and bitterly, to control the rich Raichur doab, and also the seaports of Goa, Honavar, etc. **Hence statement 1 is not correct.**
- One of the most remarkable step taken by Firuz shah Bahmani, a Bahamani ruler was the induction of Hindus in the administration on a large scale. **Hence, statement 2 is not correct.**
- The Bahmani kingdom reached its peak under the guidance of Mahmud Gawan. He was a Persian merchant. He came to India at the age of forty two and joined the services of Bahmani kingdom. Slowly he became the Prime Minister due to his personal qualities.
- The decline of Bahamani kingdom is attributed to the strife among the nobles, who became independent after the death of Mahmud Gawan in fifteenth century and divide the kingdom into five principalities of: Golconda, Bijapur, Ahmadnagar, Berar and Bidar. The absorption of these principalities in Mughal empire was done during seventeenth century. **Hence statement 3 is not correct.**

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Q 93.A

- Depending upon the mode of formation, sedimentary rocks are classified into three major groups:
  - **Mechanically formed:** They are primarily formed by physical, rather than chemical processes. In other words, the components of these rocks are created by the physical breakdown of other rocks into smaller particles, which then accumulate as sediment, which then becomes sedimentary rock. Sandstone**,** conglomerate, limestone, **shale**, loess, etc. **Hence, pair 1 is correctly matched.**
  - **Organically formed:** They form from the accumulation and lithification of organic debris, such as leaves, roots, and other plant or animal material. Rocks that were once swampy sediments or peat beds contain carbon and are black, soft, and fossiliferous. Geyserite, chalk, limestone, **coal** etc. are some examples. **Hence, pair 2 is correctly matched.**
  - **Chemically formed**: They are formed when minerals, dissolved in water, begin to precipitate out of solution and deposit at the base of the water body. Chert, limestone, halite, potash, etc. are some examples.
  - **Marble is a metamorphic rock** resulting from metamorphism of sedimentary carbonate rocks, most commonly limestone or dolomite rock. Metamorphism causes variable recrystallization of the original carbonate mineral grains. The resulting marble rock is typically composed of an interlocking mosaic of carbonate crystals. **Hence, pair 3 is not correctly matched.**

Q 94.A

- **Mahad Satyagraha was a satyagraha led by Dr. B. R. Ambedkar on 20 March 1927 to allow untouchables to use water in a public tank in Mahad (currently in Kolba district), Maharashtra, India.**
- **B. R. Ambedkar established the Bahishkrit Hitakarini Sabha in 1924 to promote the spread of education among the depressed classes by opening hostels; and by opening social centers, study circles and libraries.**
  - The Sabha also sought to improve the economic conditions of the depressed classes by opening agriculture and industrial schools; as well as to provide a platform to represent their grievances.
- **Mooknayak was founded by B.R. Ambedkar on January 31, 1920.** Mooknayak literally translates to the leader of the voiceless.
  - Despite its short life, Mooknayak laid the foundations of assertive and organized Dalit politics. It announced the arrival of a newer generation of anti-caste politics that broke the confines of region, language and political boundaries and coincided with the larger developments on the nationalist scene.
  - Mooknayak's establishment in 1920 reflected the conspicuous shift in the socio-political discourse on caste and untouchability in India.
  - Other newspapers started by Ambedkar are Bahishkrut Bharat (India Ostracized – 1927), Janata (Masses – 1930) and Prabudhha Bharat (An Awakened India – 1956).
- **Hence, option (a) is the correct answer.**

Q 95.B

- **Recent Context**: The J**ammu and Kashmir (J&K) Delimitation Commission** has recommended significant changes to the electoral map of J&K in its interim report.
- **The Delimitation Commission is appointed by the President of India under the provisions of the Delimitation Act, 2002. Hence statement 1 is not correct.**
- **In India, Delimitation Commissions have been constituted 4 times – in 1952 under the Delimitation Commission Act, 1952, in 1963 under Delimitation Commission Act, 1962, in 1973 under Delimitation Act, 1972 and in 2002 under Delimitation Act, 2002. Hence statement 3 is not correct.**
- It works in collaboration with the Election Commission of India.
- It is appointed for the purpose of drawing up the boundaries of constituencies all over the country.
- A quota of constituencies to be reserved in each State is fixed depending on the proportion of SC or ST in that State. After drawing the boundaries, the Delimitation Commission looks at the composition of the population in each constituency. Those constituencies that have the highest proportion of Scheduled Tribe population are reserved for ST.
- In the case of Scheduled Castes, the Delimitation Commission looks at two things.
  - It picks constituencies that have a higher proportion of Scheduled Caste population. But it also spreads these constituencies in different regions of the State. This is done because the Scheduled Caste population is generally spread evenly throughout the country.
  - These reserved constituencies can be rotated each time the Delimitation exercise is undertaken.

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- **The Secretary to the Election Commission shall be the ex officio Secretary of the Commission** and shall discharge his functions with the assistance of the employees of the Election Commission under the supervision of the Chairperson of the Commission. **Hence statement 2 is correct.**
- **The Delimitation Commission in India is a high power body whose orders have the force of law and cannot be called in question before any court.**

Composition of the Commission

- Retired Supreme Court judge who shall be the Chairperson of the Commission.
- Chief Election Commissioner or an Election Commissioner nominated by the Chief Election Commissioner, ex officio members.
- State Election Commissioner of concerned State, ex officio member.

Q 96.D

- **Digital Embossing Technology is a printing technology that eliminates the need for printing plates, molds, chemicals, and solvents, emitting no pollutants or waste and reducing overall energy usage. Hence, statement 1 is correct.**
- **This technology is not only useful for high-speed production of the maps but can also produce Braille Maps that can be used by more people for years together. It has been experienced that the maps produced with earlier technology have lost their readability and feeling experience within a very short span of time. Hence, statement 2 is correct.**
- **This innovative technology has been introduced, designed, and implemented first time in India by National Atlas & Thematic Mapping Organisation (NATMO) functioning as the Attached Office of the Department of Science & Technology. Hence, statement 3 is correct.**
- With encouragement and support from the Department of Science & Technology, NATMO has developed Braille Unit with state-of-art cutting-edge solutions such as Artificial Intelligence (AI) and spot UV coating methods for Digital Embossing solutions. The complete process undergoes different stages with end-to-end solutions in the digital platform.

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Q 97.D

- Raja Todar Mal had introduced the Dahsala System in A.D. 1580. Previously a rope was used for the measurement of land but Raja Todar Mal introduced bamboos for this purpose which were joined together with the help of iron rings. **Hence statement 1 is correct.**
- Land was divided into four categories that is polaj, parauti, chachar, banjar based upon scientific evaluation of cropping pattern cropping intensity and land capability of the particular agro climatic region. The total yield of each land was calculated for the last ten years and after ascertaining its average the revenue of the same was fixed for ten years. One-third part of the average produce per Bigha of land was fixed as the revenue to be paid as state demand. **Hence statement 2 Is correct.**
- The Gaj as measurement of land finds its origin during Sikandar Lodi's regime. Akbar ordered a standardization of measurement unit. Raja Toder mal made Ilahi Gaj as the definite unit of land measurement. This Ilahi Gaj was equivalent to some 41 fingers (29-32 inches), and was shorter than the Sikandari Gaj (approx 39 inches).
- Bigha was accepted to be one unit of land which measured 60*60 yeards, i.e. 3,600 square yards. **Hence statement 3 is correct.**

Q 98.A

- **The Indian capitalist class grew from about the mid 19th century with largely an independent capital base and not as junior partners of foreign capital or as compradors.** The capitalist class, on the whole, was not tied up in a subservient position with pro-imperialist feudal interests either economically or politically. In fact, a wide cross-section of the leaders of the capitalist class actually argued, m 1944-45, in their famous Bombay plan for comprehensive land reform, including cooperativization of production, finance and marketing. The Indian capitalist class grew independently and in opposition to imperialism and therefore did not see the long-term class interests as being tied up with imperialism. **Hence, statement 3 is not correct.**
- Indian capitalist class was always in favour of not completely abandoning the constitutional path and the negotiating table and generally preferred to put its weight behind constitutional forms of struggle as opposed to mass civil disobedience. This was due to several reasons.
    - First, there was the fear that **mass civil disobedience, especially if it was prolonged, would unleash forces which could turn the movement revolutionary in a social sense.** Whenever the movement

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was seen to be getting too dangerous in this sense, the capitalists tried their best to bring the movement back to a phase of constitutional opposition. **Hence statement 1 is correct.**

- Second, the **capitalists were unwilling to support a prolonged all-out hostility to the government of the day as it prevented the continuing of day-to-day business and threatened the very existence of the class. Hence statement 2 is correct.**
- Indian capitalists' support to constitutional participation, whether it be in assemblies, conferences or even joining the Viceroy's Executive Council, should be seen as a forum for maintaining an effective opposition fearing that boycotting these forums completely would help 'blacklegs' and elements who did not represent the nation to, without any opposition, easily pass measures which could s**everely affect the Indian economy and the capitalist class.**

Q 99.D

- **Priority Sector** means those sectors which the Government of India and Reserve Bank of India consider as important for the development of the basic needs of the country and are to be given priority over other sectors. The banks are mandated to encourage the growth of such sectors with adequate and timely credit.
- The mandatory PSL lending target for banks is **40% of Adjusted Net Bank Credit.** The categories of priority sector are Agriculture, Micro, Small and Medium, Enterprises, Export Credit, Education, Housing, Social Infrastructure, Renewable Energy etc.
- **Description of eligible categories under priority sector:**
  - **Agriculture:** Some of the eligible activities under the Agriculture category are
    - ✓ Loans to individual farmers [including Self Help Groups (SHGs) or Joint Liability Groups directly engaged in Agriculture and Allied Activities
    - ✓ **Loans for Food and Agro-processing up to an aggregate sanctioned limit of Rs 100 crore** per borrower from the banking system. **Hence option 1 is correct.**
- **All bank loans to MSMEs conforming to the definition under MSMED Act,m 2006** qualify for classification under priority sector lending. Bank loans to Micro, Small and Medium Enterprises engaged in providing or rendering of services and defined in terms of investment in equipment under MSMED Act, 2006, irrespective of loan limits, are eligible for classification under priority sector, w.e.f. March 1, 2018. **Hence option 4 is correct.**
- **Khadi and Village Industries Sector (KVI) - All loans to units in the KVI sector** will be eligible for classification under the sub-target of 7.5 percent prescribed for Micro Enterprises under priority sector. **Hence option 2 is correct.**
- **Loans to individuals for educational purposes**, including vocational courses, not exceeding Rs **20 lakh** will be considered as eligible for priority sector classification.
- **Bank loans up to a limit of Rs 30 crore** to borrowers for purposes like **solar based power generators, biomass-based power** generators are eligible for Priority Sector classification.
- **Overdraft availed by PMJDY account holders** as per limits and conditions prescribed by Department of Financial Services, Ministry of Finance from time to time are can be classified under Weaker Sections lending. **Hence option 3 is correct.**

Q 100.B

- Under the Representation of People Act, 1951 certain restricted set of voters can exercise postal voting. Through this facility, a voter can cast her vote remotely by recording her preference on the ballot paper and sending it back to the election officer before counting.
- Any absentee voter wishing to vote by postal ballot has to make an application to the returning officer in Form-12D, giving all requisite particulars and get the application verified by the nodal officer appointed by the organisation concerned.
- **Election Commission can allow certain category of voters to cast their votes using the facility. Hence, statement 1 is not correct.**
- **The Election Commission of India has allowed journalists to cast their votes through postal ballot facility, according to an official statement of the office of Punjab chief electoral officer on 16th January, 2022. Hence, statement 2 is correct.**
- ADDITIONAL- service voters, voters on election duty, voters above 80 years, persons with disability and voters under preventive detention are allowed to vote using Postal ballot facility.

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